SARAWAK

ANNUAL REPORT

OF THE

HEALTH DEPARTMENT

FOR THE YEAR

1930.

BY
GILBERT E. BROOKE.
M.A., L.R.C.P.,
D.P.H.

CHIEF HEALTH OFFICER,
SARAWAK.

Printed by
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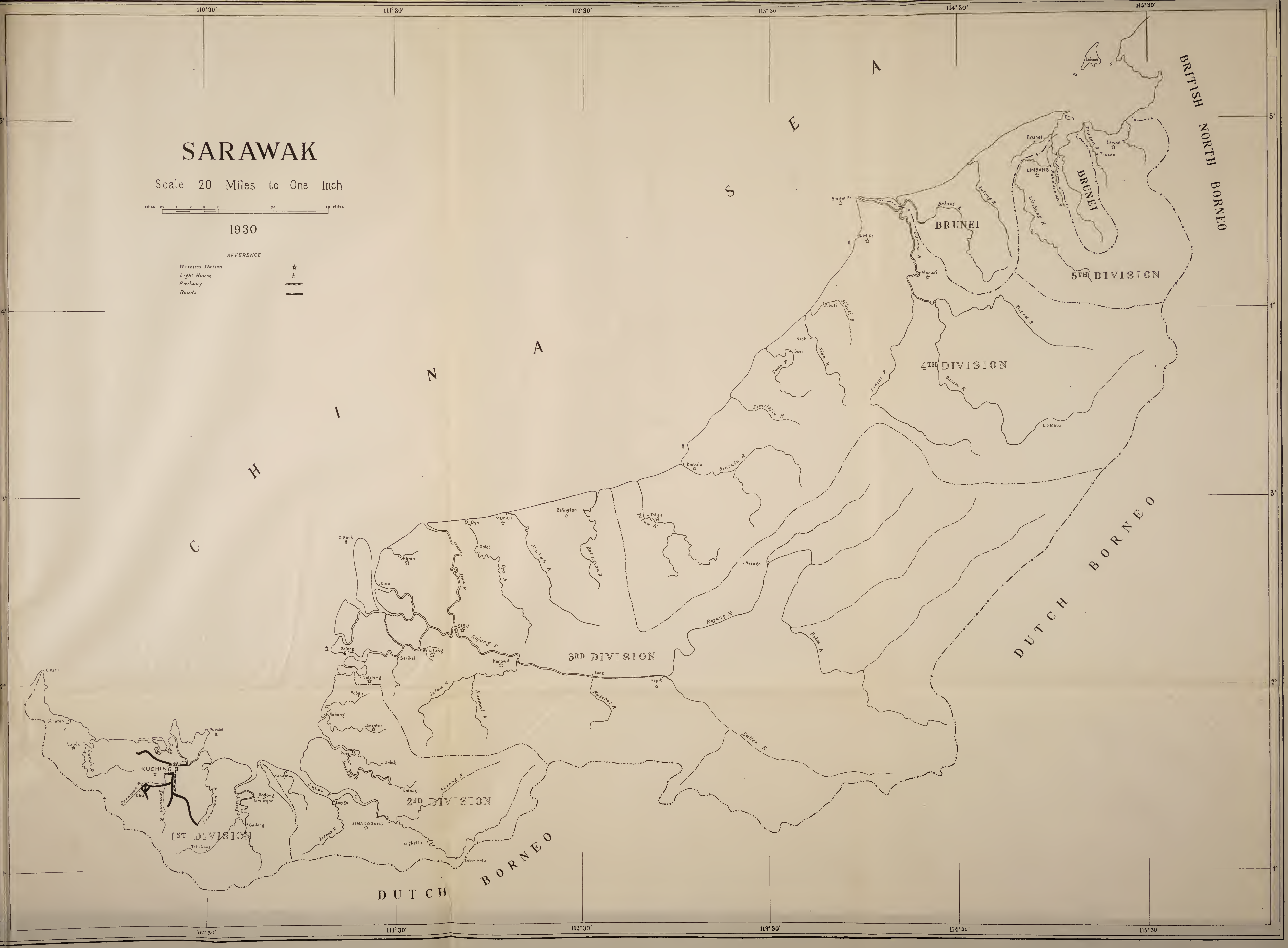

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Some of the Health Department Staff—January 1931.

REPORT OF HEALTH DEPARTMENT FOR THE YEAR 1930.

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1. **The year 1930.**—The staff at the end of the year consisted of the following:—

Dr. W. J. Hutchinson, M.B., B.Ch., B.A.O., D.P.H., who joined as Assistant Health Officer on probation on July 14th, 1930.

Mr. Choo Ah Hian formerly a senior dresser (1904) and now with over eight years service in the Health Department. He has been in charge of shipping inspection duties, vaccination, and general control of the work of the other inspectors. His work has been consistently reliable and useful.

Mr. Lee Swee Hock who joined in 1927. He is an Associate of the Institute of Hygiene, London, and a Member of the American Public Health Association. He has been in charge of the Rural Branch, 1st Division, during the year, and has done good work, both anti-malarial and in general sanitation.

Mr. H. A. Perera who joined the Sarawak Service at Miri in 1925, and was transferred to the Health Department in 1927. He holds the Ceylon Diploma for Sanitary Inspectors and has undergone the Royal Sanitary Institute Course for Sanitary Inspectors in Singapore. For some time he has been in charge of the Pateomics section in Kuching—supervising the markets, dairies, bakeries, abattoirs, arrack farm, and all other matters connected with food supply of the place. He was transferred to Miri on 28th April, 1930, as Government Sanitary Inspector, and has made an excellent start in that place, and is winning high opinions from those connected with his work.

Mr. Bong Ah Jin joined the Government Service on 1-10-1918 as a Dresser, and was transferred to the Health Department on 1-4-25. He has been in charge of the Eastern Sanitary Division of Kuching throughout the year. This division is bounded by the roads:—Sungei Kuching, Padungan Road, Mathies Road, Tabuan Road, Pig Lane, Bampfylde Road, Batu Lintang Road, Sekama Road, and Sungei Sekama. It includes the new town area of Padungan, several Malay kampongs, the Quarantine Camp, and the Municipal Septic tanks and incinerators. Also the Malay kampongs across river eastward of the Fort. He is an energetic man and has done useful work all the year.

Mr. G. W. Geikie joined the Government Service as a dresser on 18-3-1921. He was transferred to the Health Department on 19-10-1927 and holds the Diploma of the Royal Sanitary Institute of London obtained after the six months course of instruction at Singapore. Throughout the year he has been in charge of the Southern sanitary division of the town of Kuching—an area bounded as follows:—Sarawak Railway, Mosque Road, McDougall Road, Tabuan Road, Pig Lane, Bampfylde Road, Batu Lintang Road and Green Road. This sanitary district comprises a populous Malay kampong, the four large Mission Schools, and most of the European residences. It also contains the Kuching Public Gardens, which at the request of His Highness the Rajah, I have entirely reconstructed and laid out. This has been done departmentally, and great credit is due to Mr. Geikie who has been untiring in his supervision of this extensive and highly appreciated work.

Mr. Suleiman joined the Government as a probationary Sanitary Inspector on 5-8-1922 and should shortly be in Grade II. He has been all the year in charge of the Western Sanitary Division of the town of Kuching—an area bounded by the Sarawak Railway, the Sarawak River, Blacksmith Road, and Green Road to its intersection with the Railway. It also comprises the Malay kampongs across the River to the Westward of the Astana. The great majority of the Kuching Malay kampongs have thus been in Mr. Suleiman's charge, and splendid improvement in their general sanitation, well-being, and outlook, is in my opinion largely due to the tactful and keen work of Mr. Suleiman. I should like also to record the fact that Mr. Suleiman is responsible for all the multifarious plans, graphs and charts which loom so largely in the work of a busy Health Office such as ours.

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Mr. Alli Omar is a Grade III Sanitary Inspector who joined the Department on 1-9-1925. He has been Assistant Inspector to Mr. Ah Jin in the Eastern Division, for some time, and I transferred him to the responsible post of Assistant Inspector at Sarikei on 16-5-30 when that district was staffed for the first time. His work has given satisfaction.

Mr. J. A. Harry is a Grade III inspector who joined on 16-9-1926, was transferred to Bau as Assistant Inspector on 30-7-1928, and thence to Sadong on 4-2-30.

Mr. S. V. Selvaduray joined on 12-12-1927. He has undergone a R.S.I. Course in Singapore. He was transferred to Sadong on 21-8-1929, from there to Bau on 4-4-1930, and is now under orders to return to Kuching.

Mr. Cheng Geck Cheng joined the department on 1-9-1926 and is now a grade III Assistant Inspector attached to the Mosquito section.

Mr. A. K. Marican joined on 1-10-1927 and is now an Assistant Inspector grade III acting as Assistant to Mr. Suleiman in the Western Sanitary Division of Kuching.

Mr. H. F. Brodie joined on 1-3-1928 and is now a grade II Inspector in charge of the Mosquito Section, which he took over, from Mr. Nallathamby on the latter's departure from the service in October. Mr. Brodie made an aggregate number of marks of over 90% in all public health subjects in the Annual Inspectors examination in January 1930—a very remarkable performance. He has been practically responsible for two mosquito surveys of Kuching town—in addition to surveys made in various parts of the State. His work, both in the field and laboratory, is painstaking and skillful, and he has been a valuable officer to the department.

Mr. K. Nyuk Foh joined on 6-12-1927 and is now a grade III Assistant Inspector. He was transferred to Simanggang as Assistant Inspector on 3-9-1929, and then sent to Miri on 21-8-1930 to help Mr. Perera.

Mr. E. G. Reutens joined on 6-12-1927. He underwent the R.S.I. Course for Sanitary Inspectors in Singapore in 1928. He was then attached to the Pateomics Section in Kuching as Assistant to Mr. Perera, and is now a grade III Inspector in charge of that section. He has done his work satisfactorily.

Mr. Mohd. Waini joined on 1-3-1928 and is now a grade III Assistant Inspector helping Mr. Geikie in the Southern Division.

Mr. Lim Beng Siang, who worked for 2 years as a dresser in hospital and joined the Health Department on 1-5-1928. He obtained the diploma of the Royal Sanitary Institute after the six months course in Singapore and was in consequence admitted as a grade II Inspector. On the transfer of Mr. Perera from charge of the Central Sanitary division to the Section of Pateomics, Mr. Beng Siang succeeded him in the Central division which he has since had charge of. He has proved to be a keen and intelligent worker who has tactfully carried out duties which are often difficult.

Mr. Tan Poh Seong joined the department on 1-4-1930. He possesses the diploma of the Royal Sanitary Institute of London, and was admitted as a grade II Inspector after a period of probation. His keenness and intelligence marked him as a suitable candidate when we determined to appoint an Inspector for the town of Sibu on 1-7-1930; and he has since done very well in organising the many sided duties of a town inspector.

Mr. Yap Chong Howe joined the service as a probationary Sanitary Inspector on 1-7-30. He had previous service with the Telegraph Department and was chosen from several candidates after undergoing a mental efficiency test examination. He has since been under training in Public Health subjects.

Mr. Jong Nam Boo who had previously served in the Electrical Department, passed the same examination as Mr. Chong Howe and was admitted as a probationer on the same date.

Mr. Mohd. Zen joined the Government Service as a clerk on 5-3-1921 and was transferred to the Health Department on 1-4-1928. He has been Chief Clerk to the Department and has been in charge of the financial side as well as general clerical duties. He has proved to be both capable and obliging, and his accounts have been well and carefully kept.

Mr. Loh Jin Hoe was appointed a temporary clerk for the Rockefeller Foundation work under Dr. Yeager in 1927. Since then he has acted as Correspondence Clerk to the department.

Zaini worked under the Medical Department from 1-5-1928 and was transferred to the Health Department as Office Boy on 1-6-28.

2. **Office and Museum.**—The Health Office has been kept up-to-date throughout the year.

Amongst the various charts and graphs, on permanent display, are (*a*) a **working map of the town of Kuching** on which are charted water supplies, trades, conservancy and latrines, dairies, abattoirs, pig ponds and most other Municipal Sanitary Concerns. It is regularly flagged and corrected by the district Inspectors. (*b*) a **Mosquito Spot-map of the town of Kuching** displaying by coloured pins the result of the last two anopheline mosquito surveys (1929 and 1930) ; and by flags the results of action taken. (*c*) graph of Kampong statistics,—houses, populations, and density figures. (*d*) Weekly Birth and Death Chart with quarterly rates. (*e*) Annual Infantile Mortality rates with Malay and Chinese components. (*f*) a map of the whole Eastern Arena, comprising the quadrilateral figure between the points Port Said, South Africa, Japan and New Zealand. On receipt of the weekly wireless broadcast the infected ports are flagged and the danger points thus instantly recognisable. (*g*) charts of the Rat Campaign (monthly). (*h*) Meteorological charts for the five State Divisions. (*i*) an administrative map of Sarawak indicating communications, facilities, etc.

3. The small Public Health Museum attached to the Health Office which was started in November, 1929, has proved to be a steady and instructive use to the public. The sections it deals with are:—Child Welfare, Mosquitoes, Malaria, Rats, Pateomics (Food Supplies), Building-Materials, Scavenging, Conservancy, Disinfectants, Poisonous animals, Meteorology, and Water supplies.

The visitors to this little Museum during the year 1930 were not far short of a thousand (977) ; and, of these, 452 were Chinese, 386 Malays, 54 Dyaks, 32 Indians and 38 Europeans. Such attendances are very gratifying, and the net result is a gradual suffusion of health doctrines which is bound to react favourably in the future. It had been my hope during the current year to conduct regular small parties of school children to give them a practical stimulus to the hygiene theory they are taught in the schools.

4. The distinguished visitors to the Museum during the year included:—His Highness the Tuan Muda (twice) ; the Dayang Anne (three times) ; Mr. and Mrs. Holttum of Singapore; Mr. John G. Campbell of Singapore; H. E. Sir Cecil Clementi, K.C.M.G., Governor of the Straits Settlements and Lady Clementi; the Very Rev. Monseigneur Dunn (twice) ; Mrs. Maxwell and Mrs. Bamford (H.M.S. Herald) ; Rev. Fathers De Vos (twice), Walenberg (Pontianak), Reigner (Sanggau) de Vaal (Tebekang), and Von der Laas; Mr. Carl H. Boehringer, the U.S.A. Trade Commissioner at Singapore; Mr. and Mrs. V. L. Sheppard of Kemble Glos., England; the Residents of the second, third, fourth and fifth divisions; the District Officers of Matu, of Baram, and of Lawas.

5. Some photographs of the office and museum will be found as **Appendix I** to this report.

6. **Vital Statistics.**—The estimated population of the town of Kuching for 1930 was 25,293. As there has been no formal census, this figure may be considered as approximate, but it is probably fairly correct as it is based on a house-to-house enumeration conducted by my own Inspectors a few months after my arrival in 1928, correlated with the Birth and Death returns, and the immigration and emigration figures for several years.

7. The number of **births** in Kuching for 1930 was 731, the **birth-rate** being 29·13 per mille, as compared with 28·86 for 1929, and 31·04 for 1928.

8. The number of **deaths** was 617 the **death-rate** being 24·35 per mille, compared with 28·34 for 1929, and 25·02 for 1928.

9. The **Infantile Mortality Rate** for the year was 273·1—the Malay component being 369·23 per 1,000 births; and the Chinese 115·88. It is very satisfactory to note that the figures are gradually coming down—a sure indication that public health factors are beginning to produce a tangible result. In **Appendix II** will be seen a graph of the figures for the last lustre (5 years) with the mean (303·4), and component means (390·12 and 154·35) for that period.

10. The **Mean Age at Death** was 28·3 as compared with 26·3 for the previous year.

11. The **Dyscratic Index** (Δ)—a figure which I devised some years ago to give an even more delicate index of the general health conditions than does the Infantile Mortality Rate—, was 9·7 as compared with 11·6 for the previous year. The figure is an arbitrary one, arrived at by dividing the 'Mean Age at Death' into the 'Infantile Mortality Rate'; and the nearer the index figure approaches to unity the better the indication.

12. The Kuching figures for **Causes of Deaths** during the year will be found as **Appendix III**; and the **Deaths by nationality and Age Periods** as **Appendix IV.**

13. The first **Census** to be held in the whole State of Sarawak was gazetted to take place in March 1931, with the Chief Health Officer as Superintendent. Towards the close of 1930 when all the final arrangements had been made, census areas mapped out, census forms issued and distributed, and final instructions given, it was found that the probabilities of a very heavy Kabang crop (especially in the 3rd and 4th Divisions) would be likely seriously to interfere with the enumeration throughout the interior, and the census was postponed until 1932. A sample of form for use will be found as **Appendix V** a different colour being used for each Division—white for the first, yellow for the second, green for the third, blue for the fourth, and pink for the fifth. The scheme for the Report was already drawn up, and some material and maps were ready. A much simplified method of tabulation had been devised—foolproof and very cheap.

14. **Shipping Statistics of Kuching 1930.**—152 vessels were **inspected** inwards, arriving from the ports: Singapore, Limbang, Batavia, Pulo Marandam, Bongoran, Singkawang, Pamangkat, Pulo Serasan, Paloh, Pulo Siantan, and Pulo Pruantuan.

The procedure of inspection as adopted in the port of Kuching is for a Health Officer to inspect the vessels on arrival when the port from which the vessel arrives is infected. In all other cases the ship is inspected by the Chief Sanitary Inspector who examines the deck passengers individually and vaccinates as necessary. This examination of ships from a clean port is not carried out in the port of Singapore, but i think it is a wise precaution to adopt here—chiefly on account of the vaccination. A table of the Shipping figures will be found as **Appendix VI.**

15. The **total tonnage** so entering the port of Kuching during 1930 was: 52,863 of which 85·9% (45,458 tons) was derived from Singapore. Singapore is therefore the port, to the health conditions of which, most attention has to be paid. A careful note was kept, throughout the year, of the infectious disease in that port. It proved to be one of the most healthy that Singapore has ever known, there being no plague, and no cholera, and only one case of smallpox. A table of the monthly incidence will be found as **Appendix VII.**

16. The **League of Nations** has been most useful to us—for it keeps us in constant touch with the disease conditions of the East. The Bureau at Singapore which I was given the high honour of being allowed in 1925 to start, organise, and put on its feet for the first two years of its life, is still using its two-letter code, and the weekly broadcast from Saigon each Friday is picked up by the courtesy of the Sarawak Wireless Station and promptly transmitted to us. There is one point which has not yet, I think, been emphasised, which has emerged from the last 6 years of the Bureau's work, and that is, that over 90% of the infectious disease in the "Eastern Arena" is traceable to a circular area with a radius of 30 degrees and with its centre at Bangkok.

This area is not only the danger spot for the East, but also largely for Europe and Africa also. It comprises about 1½ million square miles of land, and includes most of India, China, Siam, Indo-China and the Malayan Peninsula and Archipelago.

I propose to call this critical area, the "Eastern Zymosphere." In **Appendix VIII** will be found a table of all the cases of plague, cholera and smallpox reported by the Singapore Bureau from the whole of the Eastern Arena for the year 1930. An analysis has shown that 56·7% of the cases of plague, 99·7% of the cholera, and 96·8% of the smallpox, were derived from this "Eastern Zymosphere."

17. The **Immigration and Emigration** figures for the port of Kuching during 1930 were:—Chinese Immigrants 4,340 (males 3,596 and females 744); Chinese emigrants 3,908 (males 3,339 and females 569); thus leaving a balance of immigrants over emigrants of 432. A table showing the monthly distribution of the above persons will be found as **Appendix IX**; and a graph of departures and arrivals for the year as **Appendix**

X. These last two appendices are taken from the carefully compiled records of the Secretary for Chinese Affairs.

18. One thing that Kuching is much in need of is a special launch fitted for the disinfection and disinfestation of ships. A flying-item has been put in the Estimates for the past 2 years, but funds have so far been restricted by the prevailing trade depression. The reason for the importance of this matter lies in the fact that the local rat and its flea, are both suitable to act as plague vectors; and plague (which by the mercy of Allah seems never to have visited Sarawak) would be introduced by infected rats infesting cargo from a rat-infected port. To be able to deal with this potential source of danger, would be a valuable asset.

19. In addition to the disinfecting launch, I had anticipated (during the next few years) arranging for the inclusion in the local laws of a few sections covering the necessary control of marine hygiene in the State, including the provision of quarantine anchorage; laying down when the Q flag should be flown; drawing up a form of entry declaration, and of pratique; bringing a new Bill of Health which is required by the recent Paris Convention, to which we are signatories; co-ordinating the shipping returns and procedure of the other two ocean-going ports of the State—Sibu and Miri; etc., etc.

20. **Sanitary Work in Districts.**—The work in the four town districts of Kuching, and the Rural districts outside the town, has shown satisfactory progress throughout the year.

21. In the **Western district**, 72 latrines were completed, 64 feet of ditching done, 3,197 feet of clearing, 8,204 feet of maintenance kept up, and 1,460 gallons of oil mixture sprayed. A small anti-malarial store was completed. Daily visits were paid to the Kampongs, where the number of houses is 782—48 being newly built. Up to September 5th a lot of the Municipal Garbage was dumped in this division all of which garbage was regularly sprayed with disinfectant before being covered with earth. Two hundred and seventy three children were vaccinated. Sixty one plans of new buildings were referred for inspection, and entered in the office Building Register. In addition to the two schools in this division (mosque and kpg. Jawa) two new schools were built during the year: One of these was a new experiment—a Malay Girls School opened on June 18th with two teachers and 39 children. This school was built in Datu Shahbandar's compound kindly given by him, and the Department erected pit latrines which were completed on June 27th. The other new school—the Merpati Jepang School, in Jalan Patinggi Alli was opened on September 14th with 3 teachers and 92 children. Pit latrines and a block of 4 pit urinals were constructed for this school by the Department, and completed on August 23rd and 31st respectively. The Coolie wages bill for the year amounted to $2,348.40.

22. **The Eastern Division.**—Two schools, two dhobies' wash places, rubber factory, sawmill, six sago factories, jelutong refinery, dhobie-shop, lodging house, and blachan factories were visited weekly. The Padungan new town continued to extend slowly: with the gradual completion of roads and drains, the sanitary outlook brightened considerably, and the area behind the South side of the street was reclaimed and nicely laid out by the Municipality as a Public Park and Play ground. Six old pig ponds in this district were filled during the year, with Municipal Garbage, which was kept sprayed with (60 gallons) of a Solar oil, Cyllin, and formalin mixture, until earth covering was effected. The Malay Kampongs in this district, including the fairly large one—Kampong Lomba, have shown a progressive improvement: nearly every house has now a pit latrine, nine new ones being constructed during the year. One hundred and thirty two of these latrines were oiled weekly, 1,280 gallons of solar oil mixture being used therefor. Nine houses of indigent widows were repaired by the Department. The Sekama Infectious Disease Camp is in this district. All the buildings (of a cheap but sound temporary nature, constructed in 1929) have been kept in good order and are a valuable insurance to the place, although, fortunately they were only used once in 1930. The Municipal **Septic Tank** is also in this district—being situated on the banks of the river beyond Padungan—near the blacksmiths quarter. It was built (shortly before my arrival) with three long compartments and a badly designed "grit chamber," and started work on April 1st, 1929. The wall between two of the tanks collapsed on May 16th, 1929, and the resulting two tanks have been used ever since, the grit chamber being reduced in depth and finally fitted with a grid. The effluent, which is discharged direct into the river, has never been satisfactory; and the scum on the biological tanks, which quickly started to breed large quantities of flies, has been oiled daily ever since. The new septic tank which is to replace it, is now practically completed but not yet piped to the dump. It has not been constructed according to the Health Department recommendations, and I very much doubt if it will prove satisfactory. Tropical septic tanks are tricky things

and extended experience of them is the best guide to design. The long era during which the non-incinerated **Garbage** of the Bazaar has been used for reclamation in various parts of the town, came to an end on the last day of the year 1930 when the two Meldrum Incinerators—No. 9A = 13½ cwt. p. hr. received in Kuching and presented by the Health Department on 19th June, 1929, were ready for use. By now the volume of garbage is such as will probably necessitate the duplicating of the engine and more than the duplicating the incinerating plant as soon as possible. The latter should have a top-feed which would obviate the laborious and expensive handling which is at present necessary.

The **antimalarial work** in this district has been fairly extensive: 12,780 feet of earth drains have been cleared; 7,800 feet of earth drains were graded and deepened; and 15,450 feet of new drains made, during the year. Wells and pond edges were attended to, once a month; 18 wells were closed, and 2,840 gallons of anti-malarial oil used in spraying. A surveying party of 15 men from **H.M.S. Herald** landed on April 24th and occupied No. 84 Padungan, with an office at No. 90. The houses were cleaned by us before occupation and regularly inspected to see that the disposal of nightsoil and refuse were satisfactory. The party left on September 9th. The **wages bill** for this Eastern Health Division amounted to $3,022.35 during the year.

23. **The Southern Division.**—Frequent routine inspections were made of the schools, arrack farm, kampongs, eating houses, and cemeteries in this sanitary division. Four new pit latrine were constructed by the Department, and those of 12 indigent widows were repaired. The considerable number of pit latrines in the Division were oiled weekly—on which service 520 gallons of oil mixture were used. The Septic Tank at the General Hospital was regularly inspected and kept in order; and routine clearing work in connexion with certain Government Quarters was undertaken.

Anti-malarial work by the division comprised the laying of 2,783 feet of subsoil pipes; the construction of 895 feet of earth drains; and the maintenance of 2,240 feet of surface drains.

The heaviest work of this Sanitary Division concerned the **re-construction of the Kuching Public Gardens.**

These gardens were picturesquely undulating, and contained out little except an ugly wooden bandstand, and iron plant house painted a faded salmon colour, and a few beds of plants in one corner. They were the site of the early Chinese Cemetery of Kuching, and multitudes of interlacing paths (but little used by the public) disclosed more than a dozen old coffins projecting into the air without let or hindrance. The lower part of the domain was a broad bog or swamp impossible to negotiate in wet weather. His Highness the Rajah, with that concern for the welfare of his people for which he is so justly noted, determined to have it made into a beautiful and health-giving resort for the populace, and asked me to undertake the work. This I have done; and, with the exception of a projected aquarium for which funds are not available, it is now completed.

It has taken 1¼ years to do, and almost all the work has been carried out departmentally to save expense. The results I leave to the judgment of the future, but there is no doubt as to the appreciation of the great numbers of Chinese and Malays who now make frequent use of the gardens.

24. **Central Sanitary Division of Kuching.**—This division comprises the whole bazaar. The average number of premises visited weekly amounted to about 70. The work included the constant look-out for unauthorised cubicles; routine visits to lodging houses and laundries; the issuing of nuisance abatement notices (40 issued); inspection of buildings on new, or alteration plans submitted—the number of such plans being 69 during the year. Disinfection was carried out on three occasions. One prosecution was instituted to secure the abatement of a nuisance.

Constructional work included:—

> The erection of a Police School urinal and latrine at Nagor Road; a pit urinal at the Union Club, MacDougall Road; and the superintendence of the making of 40 pit latrines for temporary barracks at the Fort across the River.

A fly survey was made, of the European reservation across river, and a report submitted. A report on bazaar overcrowding was also submitted to the Municipality.

Useful work was also done by the Inspector of this Division and one of the others, in giving courses of lectures and demonstrations in health subjects to teachers of the Malay Vernacular schools. Two teachers were trained from March to June; another two from June to October; and a third batch from October to December.

25. **Rural Districts of Kuching.**—A considerable amount of **inspection** and action, was carried out, chiefly in the neighbourhoods of kampongs Skrak, Simanggang new road, Quop, Batu Kawa, and the Leper Camp.

Vaccinations performed: 372. Eight samples of **water** were collected and sent for examination. An **incinerator** was erected at the Rajah's Gardens, 21st mile, during the year.

Clearing and ditching of 217,380 sq. feet was carried out.

Birth and Death Registers were supplied to the villages at the 7th and 10th mile, and to the Batu Kawa Police Station.

The wages of coolies for the year amounted to $4,548.

Six of this Inspector's photos will be found as **Appendix XI.**

26. **Infectious Disease and Quarantine.**—It is satisfactory to report that infectious disease has been almost absent from Kuching, and the whole State, during 1930. There has been no case of plague, cholera or smallpox. The Kuching returns show only two cases of ankylostomiasis one of influenza, and no measles, and two chickenpox. Of the hydrodynamic infections, there were only 16 cases of **malaria** in the Municipal area—imported cases, and rural district cases brought the total up to 233, and there were 1,311 cases of **fever not specified: Dysentery** amounted to 41 cases, of which the majority were in the month September which was the last of the five drier months. **Enteric** provided 36 cases, with maxima in May and June—the first two of the drier months. A table of these Hydrodynamic Infections will be found as **Appendix XVI. Phthisis** keeps up to its high incidence by 90 cases, compared with 79 in 1929 and 83 in 1928. It is a disease profoundly widespread throughout most of the tropics (as well as temperate climates) and it does not receive a quarter of the attention it should, although its cousin Leprosy is so much in the public eye. The gradual improvement of sanitation in town areas must eventually exert an influence on the incidence of phthisis, but the process is so slow and gradual, that other action is necessary. The lines which should prove most suitable are: Reporting of cases, followed by visits, leaflet propaganda in season and out of season, cinema education, and free tuberculosis dispensaries. This was part of our programme for next year.

The **Quarantine Camp** at Sekama has been kept in order. On only one occasion was it used.

27. **Anti-mosquito and Anti-malarial Work.**—This important branch of the departmental activities has been kept constantly active both in town and rural districts.

During the whole year, intensive action has been taken in controlling and obliterating the breeding places disclosed by the two careful mosquito surveys of the previous year, when the various anopheline breeding places were found to be: piggeries, fishponds, earth wells, road drains, house drains, puddles in ravines, streams, hoof marks, seepages and vegetable gardens. **A. sinensis** is the most widely spread (56%); **A. umbrosus** 12%; the remainder being **kochii, vagus, karwari, separatus, barbirostris, tesselatus,** and **ludlowi.** The latter only occurs on the outskirts of the town in the areas of slightly brackish swamps bordering on the river. Fortunately we have no **maculatus** in the town, although it is found on Satang Island and in a fair number of rural districts. **Umbrosus** appears to be our chief vector in Kuching itself, which is fortunate, since it is a comparatively mild carrier, and our malaria incidence keeps low, in consequence.

28. **1930.**—Mr. Nallathamby, the Sanitary Inspector in charge of the Mosquito Section, resigned and left the service on October 7th, when Mr. Brodie was promoted to charge of the section. A re-survey of the town was made in October, November and December. The anopheline breeding places then found amounted to only 186 as compared with 1,111 found during the previous survey. The distribution of species was as follows:—

sinensis	69	vagus	5
barbirostris	8	kochii	29
umbrosus	17	separatus	33
tesselatus	11	ludlowi	8
karwari	5	leucosphyrus	1

Of the culicine investigations, **fasciata** seems only to be found throughout the bazaar area; and, to a very limited extent, in one of the kampongs (Jawa No. 1). The breeding however is considerably diminished in both areas since the previous year.

29. In addition to the anti-mosquito work carried out by the divisional Inspectors, as previously mentioned, the Mosquito Section were responsible for the following works during the year:—

Ditching	11,440 feet
Filling	11,000 feet (cubic)
Clearing	52,200 sq. feet.

Oiling has been regularly done throughout an area of 2¼ sq. miles; 6,400 gallons of oil mixture being used, at a cost of $1,800.

More **permanent measures** have been taken in the following areas:—Batu Lintang Road, Rodway Road, the Hokkien and Teochew cemeteries, and the Sebrang European bungalows area. Three notices were issued to land owners to clear the edges of their ponds. The filling up of old pigponds in the town, has been occupying the attention of a municipal sub-committee.

30. In the **outstations,** mosquito surveys were carried out at the following places throughout the State:—Mukah, Oya, Sibu, Sarikei, Kanowit, Kapit, Miri, Limbang, Lawas, Trusan and Sundar, by Mr. Brodie, who also did several thousand vaccinations in the 3rd division smallpox areas.

31. In the office laboratory, **mountings** were made of practically all the mosquito species found in Kuching and outstations, during the years 1929 and 1930—and a large number of **microphotos** were taken of mosquito wings, etc. Graphs showing the inter dependence of **rainfall and malaria** in 1929 and 1930 will be found as **Appendices XVII and XVIII.** They disclose the usual pattern of " rain high, malaria low," and vice versa. The sections on mosquitoes and malaria, in the Office Health Museum were kept up to date and proved attractive to visitors.

32. In the **rural districts** considerable attention was paid to malarial matters and anti-mosquito work, some of which have been previously touched-on in this report. Some interesting remarks by Dr. Hutchinson, the Assistant Health Officer, on mosquito work at Sebrang, Kuop and the Leper Camp will be found as **Appendix XIX.** Dr. Hutchinson has taken a keen personal interest in all the work of the Department since his arrival in July, and has proved a valuable coadjutor and colleague.

The wages bill of the Mosquito Section, for the year, was $6,191.50.

33. **Rat Work.**—Rat and flea work was started soon after my arrival in 1928, and has been carried on ever since. It has been in the nature of an investigation into the species, infestation, etc., rather than into a campaign to reduce the general rat population. We employ four rat catchers who bring in a daily catch from the bazaar at 8 a.m. These rats are all post-mortemed, the box-trapped specimens being first chloroformed and then combed for fleas. The post-mortems, as in the previous two years, disclose the fact that a considerable number of individuals were infected with the cat tapeworm—**Taenia taeniaeformis,** Batsch, 1786—occurring as a cysticercal infection of the rat's liver. Whether this rat infection is common elsewhere, I do not know, but it is apparently not adventitious here, for it has been constantly present in examinations during nearly three years. The method of its transmission seems doubtful, but some of our experiments show that a hungry rat will readily eat cat faeces, which may give a clue to the method. The cat faeces so far examined are consistently devoid of ova. In 1929 the mean number of rats infected was 54%; in 1930 (when 9,800 rats were examined, as compared with 7,381 the previous year) 45% were infected. The Acting Sanitary Inspector (Mr. Reutens) in charge of the Pateomic Section, has also dealt with the rat branch, and reports well on the work of Probationer Sanitary Inspector Chong Howe who has been assisting him. A table of the Rat work will be found as **Appendix XX,** to this report; monthly graphs of Rat infections and flea incidence, as **Appendix XXI**; and a graph of monthly rat species, as **Appendix XXII.**

34. **Fleas.**—Constant observations were made on the rat-fleas of Kuching. During 1929, 546 male and 714 female fleas were examined; and in 1930, 1,127 males and 1,245 females. No other fleas except **Xenopsylla cheopis** were found. The **average number of fleas per rat** was highest in October—December 1928. Since then they have been rather less, with an average annual number, per rat, of 0·6 in 1929, and 1·2 in 1930. **Ticks** were sparsely present on the rats caught alive, 2,269 being found on 1,977 rats in 1930, as compared with 3,313 on 2,054 rats in 1929.

35. **Pateomics (Food Supplies).** A section dealing with the foodstuffs of Kuching was started on January 1st, 1929, with Inspector H. A. Perera in charge

The Kuching markets are situated in Gambier Road. The **Meat market** has three stalls; **Pork market**, 34 stalls; **Vegetables** 300-350; **Fish** 20, and a new Pork market was opened at the beginning of 1930. There is also a small market at the new town area of Padungan. Daily inspection of the market has been done, and all foodstuffs examined. Mr. Perera was transferred to Miri on April 28th, 1930; and, since then, Mr. Reutens has been in acting charge of the sections.

36. The **abattoirs** are situated at the 2nd mile, Rock Road: One is for cattle, and one for pigs. Frequent visits were paid to the slaughter houses at 5 p.m. to inspect animals awaiting slaughter. The lighting has been improved, and hanging hooks are now used for suspending the carcasses, but both buildings should be replaced with more up-to-date structures as soon as possible and the surroundings taken in hand. This was emphasised in the 1929 report, but has been apparently postponed again. A type lorry for transporting the meat from the abattoirs to the market we evolved in 1929 and several of these have been in use ever since. They have sheathed lining and are provided with a cover: and they are specially licensed twice a year. A photograph of a meat lorry appears as **Appendix XXIII**, and a table of animals slaughtered, as **Appendix XXIV.**

The importations of live-stock during the year were:—Oxen, 2 from Singapore and 18 from Linbang; Pigs 2 from Singapore; Buffaloes 542 from Limbang; and Goats 4 from Limbang. The total slaughterings amounted to 11,986 as compared with 11,235 the previous year, and 10,233 in 1928.

37. **Dairies.**—The milk imported into Kuching during 1930 (expressed as potable dilutions) amounted to 1,834,491 pints; and from local dairies, 56,575 pints: making a total of 4 fluid ozs. daily for every man, woman and child. Figures dealing with importations (by Messrs. The Borneo Co., Ltd., and Messrs. Sime Darby & Co.), and also Dairy Statistics, will be found as **Appendix XXV**; and a photo of the Government Dairy motor delivery Van will be seen in **Appendix XXVI.**

38. **Other Food Industries.—Bakeries.** The slump seems to have re-acted favourably here, since we issued 27 licenses as compared with 8 the previous year. Every endeavour was made to see that these places were clean and sanitary. A few notices were issued leading to satisfactory alterations.

Confectionaries on the other hand sank from 20 in 1929 to 12 in 1930. Twenty seven **eating houses** were licensed in 1930 and frequent visits paid to all. **Tea and coffee shops** increased from 31 in 1929 to 43 in 1930; great progress has been shown in these places which are now respectably sanitary.

Aerated Water Factories, four in number, were visited and inspected monthly. Three are fitted with Jewell filters, and one with Berkefeld. The factory at No. 64 Wayang Street closed down in June, owing to slack trade.

Stall-holders. Sank from 150 licenses in 1929, to 96 in 1930. About 600 **Hawkers'** licenses were issued—and extensive efforts have resulted in a fairly general protection of foodstuffs from dust, flies, etc. The **arrack-farm** at Green Road was visited weekly, and the place is kept in a clean and sanitary condition. In October 1929 a row of stalls were erected in Gambier Road by the Municipality in order to meet the increasing number of applications for stall licenses and to better control their migrations. These stalls have been kept under constant observation during 1930; as also some extra sheds sanctioned in November 1930 by the Municipality, in Main Bazaar to cope somewhat with the heavy fruit season.

Some little time ago I carried out an investigation with regard to personal **consumption of rice** amongst the inhabitants here. Parboiled rice is but little used even among the Indians. The most popular rice is that from Siam and Indo-China. The Dyaks each consume about 1·5 catties of bras spread over 3 meals: The Chinese about 1·25 catties, also having 3 meals. The Malays and Indians have only 2 meals at which there is a daily consumption of 1·2 catties of bras. The adjuvants are often insignificant and thus the diet is deficient in nitrogen and fat. Moreover the increase of volume due to cooking is such that there must generally be hyperdistension of considerable amount —giving rise to torpor and apathy—as when a **snake** is digesting its meal. Is there a gradually increasing lack of ambition amongst the Malays? Perhaps there is, at least so it sometimes strikes observers, and it may be due to the overdistension plus the shortage of nitrogen. It is of great pity that more use cannot be made of goats for milking purposes; and a national taste gradually inculcated for the manufacture and use of goats-milk-cheese.

39. **Water Supply of Kuching.**—The Water supply of Kuching which is derived from a reservoir on the lower slopes of Gunong Matang, 8 miles from the town, has continued to justify the far sighted policy of the Public Works Department who first inaugurated the service in July 1907. Since that date there has not been a single case of cholera in the town: Si monumentum quaeris, circumspice. The town mains—on high and low pressure systems with a high level water tower, two town reservoirs and a 2,000,000 gallons water tank, provide for the needs of the town in all except the occurrence of phenomenal drought. In the unusual circumstances of a call on the tower town reservoir it is necessary to use a chlorination plant. The typed used here is the Candy chlorinator made by the Candy Filter Co., Ltd. of Church Road, Hanwell, W. 7, which is put into action whenever it becomes necessary to use the water of the somewhat stagnant Lower Reservoir. The chlorine is introduced into the pumping main after the water has entered the delivery main, about ½ ℔. of available chlorine being used per 100,000 gallons of water. Samples of water taken from different parts of the town have been chemically analysed for us by the Agricultural Chemist; and bacteriologically by the Pathologist, which show that the supply in India Street (a low-lying and old quarter) is the least satisfactory. Free chlorine was not detected but the result of its action was on the whole satisfactory, though I consider that an increase in the chlorine delivery would be an advantage. The lower town reservoir was only used for nine days in July 1930 and for 16 days in August 1930.

40. Taken on the whole, I know of no place which has a direct and unfiltered supply which is so consistently satisfactory; nor a township which is better supplied with standpipes even throughout all the kampongs. The kampongs across river were first served by laying a 4 inch main across on 11th August, 1922, in a situation between the Borneo Co.'s property and the Fort. Two further 4 inch mains have since been taken across—one to kampong Buah on 19th August, 1928, and the other to kampong Sinjan in February 1929. Both these mains were first assembled on a series of trollies, the joints being not only caulked but also 'fished.' The whole series was then hauled across the river by a winch on the other side, the nose being floated-up with barrels. The pipe thus took the contour of the river-bed without damage, making a very satisfactory job.

41. The number of gallons supplied to the town was about 920,000 gallons per diem in 1930, giving an average of about 36 gallons per head daily. Previously the figure had stood at about 1.200.000 gallons; and this satisfactory curtailment of waste, has been largely due to the increasing installation of meters by the Public Works Department.

42. **Schools and Infant Welfare.**—The following is a list of the Kuching Schools as at present established.

Kuching Schools in 1930.

Schools.	Situation.	No. of Pupils		No. of Teachers.	Remarks.
		Boys.	Girls.		
St. Thomas' ..	McDougall Road ..	588	—	14	Aided
St. Mary's ..	Wayang Street ..	85	239	11	Aided
St. Joseph's ..	Rock Road ..	481	—	15	Aided
St. Theresa's ..	Do. ..	30	168	7	Aided
Hokien Free School ..	Tabuan Road ..	187	117	12	Aided
Thai Thong (Hakka) ..	Carpented Street ..	94	56	6	Aided
Kwong Min (Hakka) ..	Do. ..	52	18	3	Aided
Yik Kwang (Cantonese) ..	Do. ..	63	42	5	Aided
Keng Kiow (Hailam) ..	Do. ..	19	2	1	Private
Min Teck (Teo Chew) ..	K. H. Yeang Street ..	92	20	6	Aided
Sze Chay ..	Wayang Street ..	20	1	1	Private
Wee School ..	Do. ..	12	—	1	Private
Elementary English School (Eurasian) ..	Gartak Street ..	25	—	1	Private
Java Road Vernacular ..	Kampong Jawa No. 1	89	—	3	Govt.
Mosque Road Vernacular ..	Kampong Jawa No. 2	237	—	4	Govt.
Gersek Vernacular ..	Kampong Gersek ..	128	—	3	Govt.
St. Joseph's Chinese ..	Green Road ..	17	5	2	Private
Seventh Day Adventist ..	Rock Road 3rd mile ..	67	39	4	Aided
Malay Girls School ..	Haji Taha Road ..	—	39	2	Govt. opened 18-6-30
Merpati Sepang Vernacular School ..	Jalan Patingi ..	95	—	3	Govt. opened 14-9-30
Chung Hua School ..	Padungan ..	35	6	1	Private
Poy Lum ..	Do. ..	14	—	1	Private
Fort School ..	Fort ..	36	—	4	Govt.
	Total ..	2,464	752	110	

These schools have all been kept under the watchful eye of the Health Department and every effort has been made to improve their sanitation and encourage the provision of healthful amenities. The Education Department is keen and enthusiastic; and, under its aegis, the future of education in the State has a roseate promise. Teachers have been sent to Tanjong Malim in the Federated Malay States for proper courses of training. As already previously mentioned, six teachers have been given a two months Course of hygiene in our department. New Schools with better accommodation are now being built, and every point connected with the welfare of the children is being carefully considered—desks, books, lighting, ventilation, and play grounds, all have their share in the programme, which is bound to bear good fruit in the future.

43. I am convinced that it is in the hands of school teachers throughout the world that the future of the world lies. It is not a matter of school curricula or even of school sports—these are but a feather-weight in the balance, and can be ministered —to by any trained scholar or athlete—but it is a far wider and far nobler problem than that. The foundations of character, the development of a moral sense, the corner stones of civic responsibility, the principles of hygiene which convert jejune and cinema-haunting nondescripts into national assets—these are some of the things which count. That these youngsters have not yet learnt, here, any of these lessons, can be deduced from the widespread and perpetual theft of fruit, poultry, etc., from most of the compounds, from the wilful defacement and destruction of public adornments and the continual incubus of debt when manhood is reached. It is the same in many a tropical place, but what is to be expected when a teacher's salary is often such that it will attract only the most useless type of man. Teachers should be well paid and picked men, with a first class training in the art of teaching things that really matter—otherwise the canker of bolshevism, the spreading unrest, the socialism that saps the stimulus of self reliance, must surely increase the sum of human misery, the disorganisation of commerce, and the loss of personal self respect. The lines on which the Sarawak Education Department are working, are, I think, quite the right ones, and they must eventually bear fruit—good success to their efforts.

44. During my three years' residence I have visited most of the Chinese schools in the outstations of Sarawak, which do a useful work. I cannot however but wish that, in this country of their adoption, a map of Sarawak might more often be in evidence as well as the inevitable map of China; and that, besides the portrait of Sun Yat Seng, might be displayed a portrait of His Highness the beneficent Ruler of this State, who takes so much interest in the education of the inhabitants.

45. **Child Welfare** in the tropics is a vastly different thing from the same kind of organisation in Europe. In the former case we have a polyglot population whose various languages have to be first mastered. Each race has its own superstitious, and customs, and ritual, handed down to them from time immemorial. They have their own midwives which are acceptible to them, even though they be ignorant and cause many unnecessary deaths. Whereas in countries of the West, the authorities have to deal with peoples whose language is that of the health worker, and whose customs and habits are an open book to them.

In all cases the objects aimed at, may be summarised:—

(*a*) Antenatal advice.
(*b*) Training of Midwives.
(*c*) Registration of Midwives.
(*d*) Skilled midwifery attention.
(*e*) Infant clinics and dispensaries.
(*f*) District visiting (House to house).
(*g*) Baby shows.
(*h*) Vaccinating centres.
(*i*) Propaganda by leaflets, posters, cinema shows, etc.
(*j*) Lantern lectures to mothers.
(*k*) Attention to children of the 1-5 age period.
(*l*) Organised holiday fêtes for the children.
(*m*) Provision of playing grounds.
(*n*) Hygiene control of schools and regular examination of scholars.
(*o*) The careful and diplomatic provision of legal enactments, covering such of the above items as may be necessary.

This programme forms a special branch of public health, and needs to be controlled by a skilled and tactful administrator with a wide experience of tropic conditions and peoples. A clever and energetic worker from the West, might in a few weeks (although with the best intentions in the world) upset the apple-cart at once.

Midwives are a basic part of the programme but it is useless to force the pace: Get hold of suitable girls, train them as midwives and let them make their own way in kampong and bazaar. The seed will bear fruit before long; but legislation to register midwives should be a much later step, and will always have to include a recognition of existing untrained women.

The Health Visitors should not only be qualified midwives, but should also have a special training in public health, and dispensary work, for at least 6 months, and they should be of the same nationality as their populace. The dicta for tropical organisers should be:—Know your public, their language and customs; go very slowly and cautiously at first; and always start by winning their confidence. It has been proved many times over, that the first step to their confidence is best secured by the introduction of infant dispensaries at strategic points of easy access. The next step is the lure of baby-shows. Once you have thus got hold of them, the rest of the programme becomes increasingly easy, and house to house visits will not be resented. The success of the whole scheme will also largely depend on the sympathy and co-operation of medical and native-affairs departments—which should be invariably obtainable.

A start was made to work up child welfare by this Department about the middle of 1930. A small infant dispensary was fitted up, and a monthly baby-show inaugurated in our office. For a couple of months we had the services of a Miss Collinson who had done some welfare work in England. I must say that the inception of this work has borne results which far exceeded my own sanquine expectations.

There were five baby shows during the year: The first was held on **June 28th** with a very creditable total of 69 babies—all Chinese. The second show was held on **July 26th** when we had 47 babies of whom 2 were Malays (the thin end of the wedge!): Of these babies 27 were breast-fed and 20 bottle-fed. The third show was held on **August 30th,** with 55 entries of whom 7 were Malay—29 breast-fed and 26 bottle-fed. The fourth show was on **October 25th** when we had 54 babies of whom 13 were Malay—30 breast-fed to 24 bottle. The fifth show was held on **November 29th** with the gratifying number of 71 actually comprising 43 Malays!! Entries have come from as far afield as Bau and Siniawan!! Prizes (1st, 2nd and 3rd) were given for all the shows by an anonymous donor. Many friends have honoured us either with their presence or their help, and I should like to record the following list of ladies who have been very welcome: The Dayang Anne, Mrs. Gange, Mrs. Edwards, Mrs. Maxwell, Mrs. Bamford, and Mrs. Brooke. The net result of the effort is, that over 300 mothers have been attracted from all over the kampongs and bazaar—they have begun to know us, and our methods, and we have progressed well in gaining their confidence—that in itself is a great thing: but, even better, is the fact that, having secured their attendance, we have been able to talk to them on health matters, to talk about disease and health, about feeding, about their houses, etc., and have thus sown seed which may some day come to harvest in the great field of public health. As **Appendices XXVII and XXVIII** will be found Malay and Chinese samples of our baby-show propaganda. My last show will be held early in February, when I expect a record number of entries. Messrs. The Nestles Milk Co. in Singapore have most kindly promised to donate prizes, milk, feeding bottles, etc., as was their generous practice for the Singapore Child Welfare Society during the six years that I was connected with it. Messrs. The Borneo Co. are kindly seeing to the import. (Note on 9-2-31: There were **90 entries** at the show on 7th February).

47. **Leper Camp.**—The earliest Kuching Leper Camp was started at the 7th mile Rock Road, but it was not considered an entirely suitable site; and a meeting was held at the Court House on September 14th, 1917, at which another site was deemed advisable and it was decided to invite subscriptions to a fund to be known as the **Rajah Charles Brooke Memorial Fund.** Having examined a number of sites, Satang Island was fixed on, and the buildings were completed in 1924 at a cost of $53,204.94 out of a fund total of $75.836.72. Had there been a Health Department at that time, this expenditure might have been saved, for we have found the most virulent malaria carrier of Malaysia —**Anopheles maculatus**—to be breeding there in numbers. Consequently it is not surprising that the leper patients were badly attacked with malaria; and this fact, combined with difficulty of obtaining supplies during the **landas,** and the unsatisfactory water-supply of the Island, made it imperative to transfer the camp again to some more suitable site ashore at the 13th mile Penrissen Road, and the transfer was effected in October 1925. This is the site now in occupation, but a proper water supply was not first arranged for—nor was a mosquito survey previously carried out. These things have, however, since been rectified. Mr. Clunies Ross was appointed Superintendent of

the Camp on February 1st, 1926. His practical knowledge of field work and house construction, combined with untiring energy, and adaptability to the conditions of a rather lonely life, seemed to mark him as a suitable candidate for the post. A small commission was appointed in 1928 to enquire into the organisation of the Camp; and, of the 25 main headings of their report, every one of their recommendations have been carried out, except the provision of a Camp Mosque for the Islam patients, which is awaiting the decision of the Mohammedan community. The most important of the Commissioner's suggestions, dealt with the provision of a better series of books and records: These were all provided, and a glance at **Appendices XXIX to XXXII** of this report, will show that the camp does not lag behind most other leper settlements in those respects. The last of the old building material from Satang Island was brought over in April and November 1928, and all of the old houses and a number of new ones have been erected at the 13th mile, by the lepers themselves. Three sections have been formed—one for Dyaks, one for Malays, and one for Chinese. The last section to be finished is that for the Dyaks; and, at the present time almost all the original attap houses have been replaced by more permanent wooden structures. The **water-supply** was formerly secured by pumping with a hand pump from a small stream (liable to constant road contamination) into a raised tank from which a gravity pipe supply fed the Camp. In 1929, we traced the source of the small stream which provided the water-supply, and found three springs (in the Leper Camp Reserve) all of which were fenced round with barbed wire: The stream itself was cleaned, cleared of obstructions; and, someway behind its approach to the road culvert, a concrete dam was constructed by our own leper labour, thus providing a reservoir with an approximate capacity of about 50,000 gallons. The excellent water so obtained is now pumped by a motor engine to some tanks on the hill above the camp, and thence delivered by gravity. The lepers themselves are really very well off. They are comfortably housed and fed, free of charge. A schedule of their ample diets will be found as **Appendix XXXIII.** They grow padi, and plant vegetables and fruit. Those who can work, and like to work, are paid by the Government at the rate of 50 cents a day, and do all the carpentry, sanitation, antimalarial work, and any other odd jobs which may be necessary. Opium smokers are provided with one packet of opium daily, free of charge. A camp cinema apparatus provides periodical amusement when the weather permits. A shop, at the entrance to the Camp, run by an ex-leper, provides extras dear to their heart and comparatively cheap to their purse, when they have money to spend. The conditions of the camp—its surroundings, organisation and amenities—exemplify its continual progress, and there is no reason why the machinery of the camp should not work smoothly and efficiently provided that there is no faulty cog to the wheel.

48. **The Camp in 1930.**—Mr. Clunies-Ross has furnished an interesting annual report from which I propose to extract the most pertinent matters.

The Staff, in addition to the Superintendent, consisted of: **Assistant Surgeon M. N. R. Kurup,** L.C.P. & S., Calcutta (who was formerly in the Johore Medical Department and joined the Sarawak Service in 1924); he returned from leave on July 7th, 1930, and his work has been satisfactory. **Dresser SiRikod** was transferred from the Quarantine Camp and took up his duties on February 11th. There are 6 **warders,** one of whom (Sarjin Singh) was invalided out and his place filled by warder Ram Singh.

During the year the total **patients treated** were 471, an increase of 87 over 1929. A graph showing the territorial derivation of these lepers will be found as **Appendix XXXIV**; and another comparative graph of totals of lepers treated during the last six years, as **Appendix XXXV.** There were 141 **fresh admissions** and 17 **re-admissions.** Cases with disease arrested were **discharged** to the number of 43. Eleven patients absconded, and there were 26 **deaths.**

50. A total of 25,704 **injections** were given; and 49, 612 dressings carried out.

The drugs administered, included—

Alepol (in 3, 3·5 & 4% solutions)	22,889	injections
Avenyl (in ·25% solution) in hydnocarpus oil	2,646	,,
Pot. Stib. Tartrate (1% solution)	94	,,
N.A.B. (0·3% solution)	17	,,

In addition moogrol and hydrocreol were used as ointments for ulcer. A comparative graph of injections at the Leper Camp for the last 6 years will be found as **Appendix XXXVI.**

The general health on the whole has been fairly good. The incidence of water borne disease has dropped rapidly since the construction of our reservoir. There have been 8 cases of benign tertian during the last quarter of the year, all of which recovered. A large amount of work has been done in straightening streams, filling, clearing, draining, etc., and also in planting shade trees. A mosquito survey has been done and the species found, and the site of their breeding, will be found on a plan of the Camp as **Appendix XXXVII.**

Mr. Clunies-Ross's Annual Report is included as **Appendix XXXVIII.**

51. **Meteorology.** It is generally recognised that the record of meteorological conditions is an **important branch of public health;** and the information so obtained is not only of value from the health point of view, but also to shipping, to the agriculturalist, to the planter, to the traveller, and to the scientist. On the complex actions and reactions of pressure, temperature, humidity, and air-movement, depend the comfort and well-being of the delicately balanced human mechanism. The records in Kuching comprised only Rainfall, Maximum and Minimum Temperature, Wet and Dry Bulb Temperatures, and barometrical readings, until January 1929, when the control was handed over to the Health Department. The records previous to that date, cannot always be relied on.

52. The **Kuching Meteorological Station** is now a station of the sub-second order.

It is situated in the Museum grounds in Latitude 1·33·29 North and Longitude 110·20·31 East. The height of the Station (bench mark in centre of area) is 29·5 feet above Mean Tide Level. It is enclosed by a circular barbed wire fence, and readings are taken twice daily at 6 a.m. and 6 p.m.

53. The records taken are as follows:—

Maximum and Minimum Shade Temperatures.
Wet and Dry Bulb Temperatures.
Solar Radiation Temperatures.
Grass Minimum Temperature.
Subsoil Temperatures (3 feet).
Rainfall.
Evaporation.
Sunshine Recorder.
Variations in subsoil water-levels.

The shade instruments are housed in a **Stevenson's Screen** of the standard pattern. The Evaporation is measured by an **Atmometer** of copper devised some years ago by myself to constitute a standard pattern for use in the Straits Settlements when I was in charge of meteorological matters in that Colony. It consists of a copper cylindrical vessel of 8 inch diameter—placed on a concrete base and fixed near the rain gauge. It is covered by a cone shaped copper cover painted white, and the rim of the cover projects beyond the rim of the receptacle to allow the free passage of wind over the surface of the contained water. 1,000 c.c. are filled into the container, once a day, and the evaporated amount is read off daily before refilling with water. I hope before long to make investigations with a view to determining the mathematical relationship between the readings of this atmometer of mine, and those of the Wet and Dry bulb thermometer. **Barometrical readings** have been discontinued during the last two years since the movements of atmospheric pressure seem but slight and unimportant, and do not very much throughout the year. I recommend that a new Standard Barometer be obtained before readings are begun again.

The **Sunshine Recorder** is an ancient Jordan's instrument and should be replaced by a Campbell-Stokes instrument.

Subsoil Water movements are recorded by reading the levels of the water, in a tube 17 feet long (cast iron pipes) sunk into the ground and the mouth covered. The readings are taken as from Mean Tide Level as a fixed point.

Cloud-movements and Wind records are not yet taken. I had intended this year to put up a Robinson's Anemometer and a Pressure Anemometer on the roof of the Museum, with electrical connexions to recorders on the ground floor. A **nephoscope** should also be procured for the station. The recording throughout the year has been satisfactorily done by Mr. G. W. Geikie—the sanitary inspector of the division in which the station is situated.

54. **Meteorology in Outstations.**—Very little has been done in the past at any outstation, except to record the rainfall, perhaps with indifferent accuracy. On visiting

outstations I have always inspected the rain gauges and instructed the dresser or other observer, how to record properly.—A number of unsatisfactory gauges have been replaced with proper instruments. **Rainfall** should, I think, be recorded at every District Officer Station throughout the country.

A slightly wider range of records dealing with temperatures, humidity, wind-velocity, etc., should be taken at a few strategic points throughout the country: I suggest Sibu, Belaga, Miri and Lawas. I had already started arrangements for a small **station at Miri.** The Kuching Meteorological Returns for 1930 will be found as **Appendix XXXIX.**

55. **Outstations.**—During my tenure of office, I have inspected the following places—each, a varying number of times:—Bau, Siniawan, Busoh, Batu Kawa, Quop, Matang, Sungei China, Sungei Rayu, Lundu, Sibu Laut, Santubong, Mauratebas, Goebil, Sadong, Sebuyau, Simanggang, Rejang, Sarikei, Binatang, Sibu, Kanowit, Song, Kapit, Bintulu, Miri, Baram, Bakong, Limbang and Kuala Lawas. Reports on the inspections were sent in thereafter.

56. The following will give some idea of the sizes of some of the bazaars at different places:—

Stations.	Houses.	Peoples.	Nationalities.
Bintulu	64	350	Mostly Teochews and some Hokiens, etc.
Baram	57	373	Mostly Hokiens.
Binatang	42	270	Chiefly Foochow & Hokiens.
Kanowit	49	460	Mostly Hokiens.
Kapit	37	350	Do.
Limbang	43	277	Do.
Lundu	45	178	Mostly Kheks & Teochews.
Rejang	25	90	Mixed notionalities.
Simanggang	48	224	Mostly Teochews.
Sarikie	76	420	Chiefly Foochows and Cantonese.
Song	20	150	Mostly Hokiens.

Of the above bazaars, Simanggang, Baram, and Limbang were the cleanest, and Song the dirtiest. The necessity for better sanitation was impressed on most of the people, which will I hope have borne some fruit. We began to staff some of the outstations with Sanitary Inspectors in 1928. Places at which such have been, or are, stationed, are:—Miri, Sibu, Sarikie, Sadong, Simanggang, and Bau. The most interesting organisation in the starting of the new work has been at Miri and Sibu. One of my senior inspectors—Mr. H. A. Perera went to the former place on 28th April, 1930; and a well-qualified and capable inspector Mr. Tan Poh Seong went to Sibu on 1st July, 1930. Both these men have done very well and I am very pleased with the results achieved.

I suggested an extended area, with proper demarcation, as a new town limit for **Sibu,** and on this area the inspector is now working. This area includes not only the Island, but takes in a strip on the other side of the loba about 200 yards behind the kampong Nyabor Road from Green Road to the Saw-mill. The inspector has a small office and telephone, and has made a good beginning on market and town inspection, registration of births and deaths, mosquito and ratwork, and other activities, in all of which he is taking a keen interest.

Miri presented a more difficult problem in that there was an occasional difficulty in delimiting the spheres of influence of the Government and the Sarawak Oilfields, Ltd. This problem was most happily settled. The town of Miri has now definitely been extended to include the whole area between Tanjong Lobang and Lutong; and an Executive Municipal Board has been established, on which both Government and Sarawak Oilfields, Limited, are satisfactorily represented, to control municipal matters. The small Health Office is making steady progress, and inspector Perera is winning good opinions on all sides. I confidently expect that public health in Miri has a good future in front of it, under the capable aegis of Drs. Murray and Schneider and the new Municipal Board.

57. **A talk about the Staff.**—The Assistant Health Officer—Dr. W. J. Hutchinson who came out to join the department on July 14th, 1930, has identified himself with the work of all our sections, and has proved himself to be a keen and valuable Health Officer.

The Divisional and Sectional Inspectors have done good work throughout the year. The Assistant Inspectors have some of them caused anxiety at times. In January 1930

I started an **Annual Inspectors' Examination**, on the results of which would depend recommendations for increments, etc: These examinations are also useful in that they keep up an interest in all branches of public health work as well as in that branch in which the inspector happens to be engaged. We have just finished the 2nd Annual Examination as this report is being written, and the table of results is given as **Appendix XL.** A photo of our Kuching Staff, in January 1931, will be found as a **frontispiece** to this report. An 'at Home' and a Badminton Tournament for the staff has been held annually.

Our **coolie Staff** consists mostly of Malays, with a sprinkling of Chinese and Tamils. From what I have seen of their work, I consider that they have been quite keen and energetic on the whole, and I think that those who have been with us for any length of time, have learnt much. Two years ago, I was rather concerned to find that most of them were always in straightened circumstances, and apparently often in debt —a condition which I fear is very widespread: Consequently I made an attempt to encourage thrift among them, and all those who had been with us for more than a certain time, were given a Savings Bank Book. When thinking how to reward some the coolies of the South Division the other day, after very good work for a year and a half at the re-organisation of the Kuching Gardens, I was pleased to find that quite a number of the men still had bank books, and had been adding small amounts at frequent intervals, and not withdrawing any.

58. **Things Scientific.**—Work has been steadily done in the preparation and mounting of an extensive series of the local **mosquito fauna**—both anopheline and culicine; and micro-photos taken of many of the local mosquito-wings—as mentioned previously in this report. The wings are valuable not only for demonstrating the scale structure and markings, but also as showing what I call the "critical angle," or inner angle formed by the line of the costa and a line drawn through the apices of the first submarginal (R 2) and the second Posterior (M 2) cells. This angle seems to be constant in each species, and may be an additional check in the diagnosis.

The large snail, **Acatina fulica**, which seems to have reached Asia years ago from its home in Africa, via Mauritius and Ceylon, has now become well established in Kuching and is doing much damage in plantations and gardens. It probably reached here from Malaya (where it is now plentiful) by vessels whose crews appreciate the flesh as a delicacy—but when it was first reported, I do not know; nor whether it is yet found in other parts of Borneo. I am writing a short monograph on it, for the use of the Agricultural Department. I should like to thank the **Entomological Department of the British Museum** for their very frequent diagnosis of considerable numbers of specimens sent to them from here, and for their courteous and informative replies to our queries. The Sarawak Museum has also been most helpful.

The **Dust-allaying mixture** which we use for the wooden staircases in our office, has continued to prove most satisfactory. It is made of: Solar oil 8 parts, Kerosene 3 parts, and white cyllin 1 part. It penetrates the wood readily, disinfects and at the same time lays the dust for at least a week even when much exposed to the bare feet of the public. It is applied once a week—and the surface is merely wiped with a dry cloth daily. It is of course of no use for concrete work.

59. **On the legal side of things.**—Enactments in the shape of Orders, Notifications, By-laws, etc., which deal directly and indirectly with public health matters, exist in considerable profusion but they are mixed up with much non-health matter and are unindexed and uncodified, and it would be of very great advantage to the State if they could all be collected, re-arranged, amended, and added-to, but it should be done by some one who is not only an expert on health, but who has a good knowledge of the every-day working of such matters. I had hoped to do this next year, but if His Highness would like me to draw up a tentative consolidation for consideration and revision by the legal department, I will try and get it done by the middle of May.

There is one thing in this connexion which we have found very inconvenient, and that is, that one of the most pregnant orders dealing with public health—the Municipal Order of 1922—seems to have been for some time out of print; and copies are not obtainable either at the Printing Office, or Secretariat, or at the Municipality. It is in the nature of a bible for the every-day work of the inspectors, and they should each have a copy—but can never get one.

Brief Review of Work for the last three Years.

60. In 1928 I found that the public-health-infant had barely seen the light of day. There were miles and miles of open earth drains and swamps breeding innumerable and unchecked mosquitoes, with no attempt at location of species. There were inspectors, but with little organisation. There was an office, but with scarcely a record

—no books, no files, no periodicals, no maps, no plans, no graphs. Some kind of statistics had probably been kept, but, as the population was an unknown figure, their value must have been doubtful. There was a small and dilapidated quarantine camp quite unfit to cope with any sudden infectious disease. There were kampongs, untidy, and often extremely insanitary; nightsoil passed on to the ground surface; and flies innumerable (note: There are now 581 kampong latrines). But it is needless to continue the list: The foregoing report will give some idea (even though a sketchy one) of the lines on which we have worked during the last three years. We have gained much of the confidence of the people, and I think they themselves are certainly getting healthier, and probably happier and more self respecting. We have laid a foundation as carefully as we could, and it is my earnest hope that a worthy superstructure will some day be built thereon. The Medical Department will have a great chance.

61. Some disappointments we have doubtless had, the worst of which is perhaps the failure to secure a 'back-lane' system for the Kuching bazaar. I have urged it since my arrival, but so far funds have not been available for this very necessary improvement.

62. The two mile road to join up Sibu Laut with Kuching, as recommended several times, would be a valuable addition to the health facilities of a place which has all too few facilities for rest and convalescence.

63. **Valedictory.**—The exigencies of financial circumstance have selected the Health Department as the first to fall under the axe, and we cease work on February 15th, 1931, when the Medical Department will take over.

64. There is an ancient Chinese proverb; "one man makes a road and another man walks on it." Therein lies the verisimilitude of evolution, not the tale of tragedy: Tragedy comes, however, if the road lapses into the limbus of unused and forgotten things. We cannot secure insurance without paying our premium.

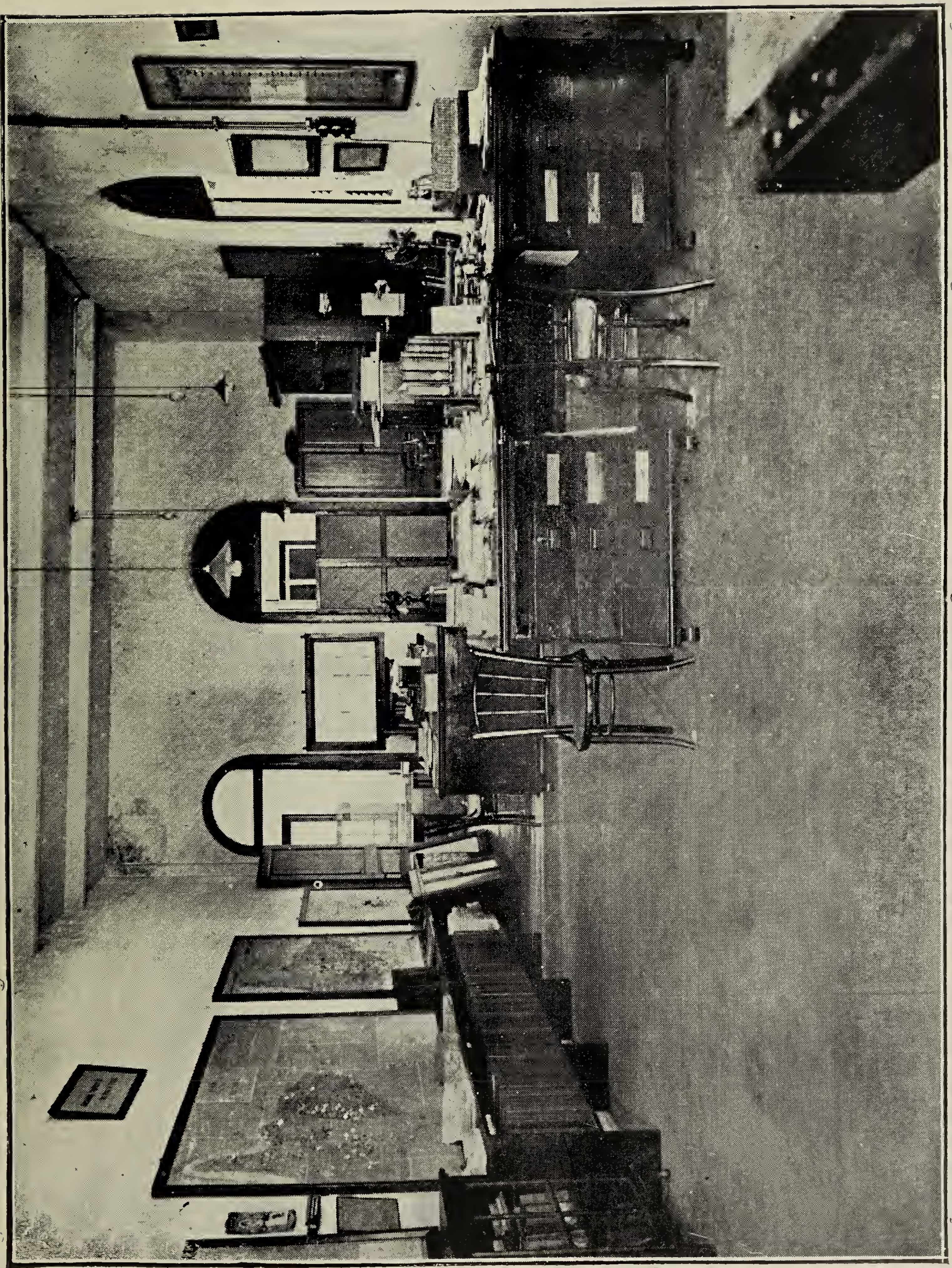
65. **Hactenus.**—I make my bow of exit with a tribute of grateful thanks to all those good people of Sarawak, both official and unofficial, who have helped during the last three years to lighten the burden and the heat of the day, and to assist our labours —labours which, I hope, will bear fruit through the years to come.

"IRE TAMEN RESTAT."

GILBERT E. BROOKE,
Chief Health Officer,
Sarawak.

KUCHING, February 6th, 1931.

APPENDIX I.



Office of C. H. O. and A. H. O., Health Department, Sarawak.

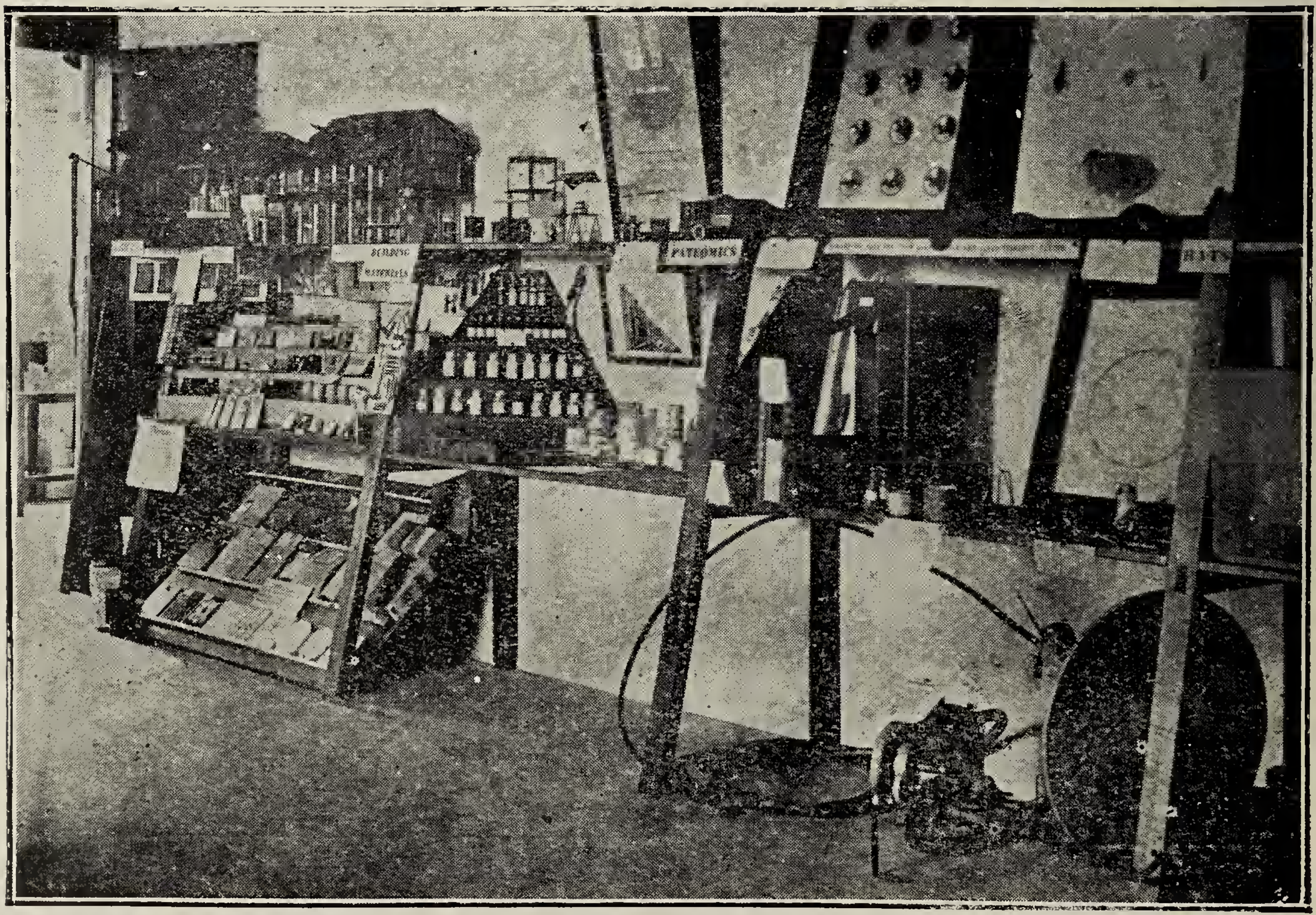
Health Department Museum; Sections of Meteorology and Disinfectants.

APPENDIX I—(contd.)

Health Department Museum—General View of; and Sanitary Inspectors' Desks.

APPENDIX I—(contd.)

Health Department Museum; Sections of Child Welfare, Mosquitoes, Rats, and Pateomics.



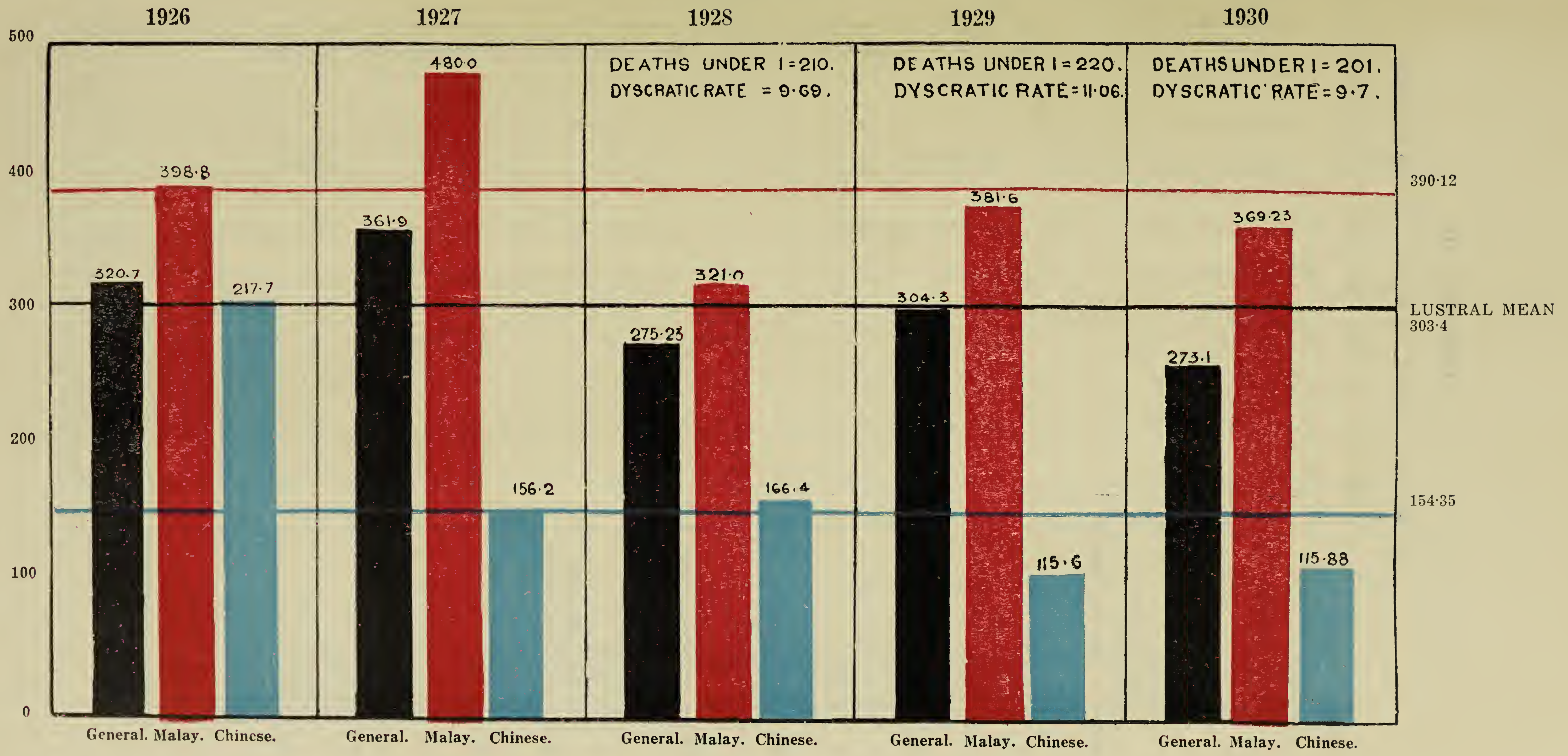
Health Department, Sarawak. Some of the Working Maps.

Health Department Museum; Sections of Conservancy and Scavenging.

APPENDIX II.

INFANTILE MORTALITY RATES

KUCHING AREA.



APPENDIX III.

CAUSES OF DEATH DURING 1930 IN KUCHING.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Infective Disease:													
Ankylostomiasis ..	—	—	—	—	—	—	—	—	—	—	1	1	2
Influenza ..	—	—	—	—	—	—	—	—	—	—	1	—	1
Beri-Beri ..	4	2	5	2	3	7	4	3	4	4	4	2	44
Infantile Diarrhœa ..	—	—	—	—	—	—	2	—	—	—	—	—	2
Dysentery ..	1	2	3	4	1	—	3	4	7	3	1	4	33
Typhoid ..	—	—	—	—	1	—	1	1	—	1	—	—	4
Fever (unspecified) ..	1	2	—	—	1	1	1	4	1	—	1	1	13
Phthisis ..	7	3	9	8	5	8	10	4	13	6	8	9	90
Pneumonia ..	1	2	—	1	—	1	3	3	1	1	3	5	21
Malaria ..	1	—	—	—	1	—	1	—	—	—	—	1	4
Septicæmia ..	1	—	—	—	2	2	1	1	2	2	—	1	12
Cerebral Gumma ..	—	—	—	1	—	—	—	—	—	—	—	—	1
Liver abscess ..	—	—	—	—	1	—	—	—	—	—	—	—	1
Disease of Digestive System:													
Thrush ..	—	—	1	—	—	—	—	—	—	—	—	—	1
Marasmus ..	—	—	—	—	1	1	2	—	—	—	—	2	6
Vincent's Angina ..	—	—	—	—	—	—	—	—	—	—	—	—	1
Gastric ulcer ..	—	—	—	—	—	—	—	—	—	—	—	—	1
Enteritis ..	—	—	—	—	—	—	—	—	—	1	—	—	1
Intestinal colic ..	—	—	—	—	—	—	1	—	—	—	—	—	1
Intestinal Obstruction ..	—	—	—	—	—	1	—	—	—	—	—	—	1
Peritonitis ..	1	1	—	1	1	1	—	—	1	—	—	1	7
Flatulence ..	—	3	—	—	1	—	1	2	1	—	2	—	10
Unknown ..	—	—	—	—	—	1	1	—	—	—	1	—	3
Disease of Respiratory System:													
Hæmoptysis ..	—	—	—	—	—	—	—	—	—	1	—	—	1
Cough ..	—	—	2	—	—	—	—	—	—	—	—	—	2
Broncho pneumonia ..	3	2	7	3	1	8	3	6	8	5	5	3	52
Bronchitis ..	3	—	1	—	—	—	—	—	—	—	—	—	4
Asthma ..	—	2	—	—	—	—	—	—	—	—	—	—	2
Pharyngitis ..	—	—	—	—	1	—	—	—	—	—	—	—	1
Empyema ..	—	—	—	—	—	—	—	1	—	—	—	—	1
Disease of Circulatory System:													
Aneurism ..	—	2	1	—	—	—	—	—	—	—	—	—	3
Endocarditis ..	—	1	1	—	—	—	—	—	—	—	—	—	2
Myocarditis ..	—	—	—	—	—	1	—	—	—	—	—	—	1
Pernicious anæmia ..	—	—	—	—	—	—	—	—	—	1	—	—	1
Disease of Nervous System:													
Apoplexy ..	—	1	—	1	—	—	—	—	—	1	—	—	3
Epilepsy ..	—	1	—	—	—	—	—	—	—	—	—	—	1
Mania and Exhaustion ..	—	—	—	—	—	—	1	—	—	—	—	1	2
Cerebral abscess ..	—	—	—	—	—	—	—	—	—	1	—	—	1
Meningitis ..	—	—	—	—	—	—	—	—	—	—	—	1	1
Hemiplegia ..	—	—	—	—	—	—	—	1	—	—	1	—	2
Cerebral hæmorrhage ..	—	—	—	—	—	1	—	1	—	—	—	—	2
Disease of Urinary System:													
Nephritis ..	—	—	1	—	—	1	—	—	1	—	3	2	8
Cystitis ..	—	—	—	1	—	—	—	—	—	—	—	—	1
General Diseases:													
Inanition ..	—	1	1	—	—	—	—	—	1	—	—	—	3
Senility ..	6	4	3	8	3	8	7	7	3	2	7	4	62
Cancer of Liver ..	—	—	—	—	—	—	—	—	—	—	1	1	2
Cancer of Stomach ..	—	—	—	—	—	—	1	—	—	—	—	—	1
Convulsions ..	22	11	7	14	11	15	14	18	17	15	11	12	167
Diabetes ..	—	1	—	—	—	—	—	—	—	—	—	—	1
Lymphadenoma ..	—	—	1	—	—	—	—	—	—	—	—	—	1
Other Diseases:													
Child birth ..	1	1	2	1	—	—	—	—	1	—	1	—	7
Miscarriage ..	—	—	—	—	—	—	—	—	—	—	1	—	1
Puerperal insanity ..	—	—	—	—	1	—	—	—	—	—	—	—	1
Alcoholism ..	—	—	—	—	—	—	—	1	—	—	—	—	1
Hip joint, Tuberculosis of	—	—	—	—	—	—	1	—	—	—	—	—	1
Morphinism ..	—	—	1	—	—	—	—	—	—	—	—	—	1
Drowning ..	—	—	—	—	—	—	—	3	—	—	—	1	4
Burns ..	—	—	—	—	—	—	4	—	—	—	—	—	4
Hanging (suicidal) ..	—	—	—	—	—	—	—	—	—	—	—	1	1
Rupture of Liver ..	1	—	—	—	—	—	—	—	—	—	—	—	1
Carbuncle ..	—	—	—	—	—	—	—	—	—	1	—	—	1
Cellulitis of leg ..	—	—	—	—	1	—	—	1	—	—	—	—	2
Pemphigus neonatorum ..	—	—	—	—	—	—	1	—	—	—	—	—	1
Stab wound ..	—	—	—	—	—	—	—	—	—	—	—	1	1
	53	42	46	45	36	57	64	61	61	45	50	55	615

APPENDIX IV.

DEATHS 1930—KUCHING MUNICIPAL AREA—BY NATIONALITY AND AGES.

	Still-born			Under 1 year			1—5 years			5—15 years			15—45 years			Over 45 years			Unknown			TOTAL
	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	
Chinese ..	5	1	6	16	12	28	12	5	17	8	3	11	66	26	92	64	17	81	1	—	1	
Dyaks ..	1	—	1	4	2	6	—	—	—	—	—	—	2	7	9	—	—	—	—	—	—	
Eurasians ..	1	—	1	—	1	1	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	
Javanese ..	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	
Kayan ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Malays ..	9	5	14	93	72	165	10	8	18	5	4	9	31	28	59	45	40	85	—	—	—	
Philipinos ..	—	—	—	—	1	1	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	
	17	6	23	13	89	202	22	13	35	14	8	22	103	64	167	110	57	167	1	—	1	

25.6.30 A Santubong Malay named Pa' Tuah died at the age of 106.

9.6.30 A Mentawak Malay named Moosin died at the age of 115.

17.11.30 A Mentawak Malay (f) named Pandak died at the age of 130.

APPENDIX V.

SARAWAK CENSUS

(SURPLUS FORMS)

Area No. or House No. } ....

Village or Kampong or Street } ....

1	2	3	4	5	6	7
Nationality. 國 籍 بڠسا Bangsa	Sex. 性 جنتن اتو ڤرمڤوان Jantan atau Perempuan	Age. 歲 عمر Umor	Single or married 獨身或已娶 سده اتو بلوم بركهوين Sudah atau belum berkahwin	Place of Birth, 生 產 地 تمڤت دڤرانقكن Tempat di-peranak	Occupation. 職 業 ڤكرجأن Perkerja-an	Religion. 宗 教 اكا Ugama

ڤڠاجران باݢي توکڠ بنچي (ڤڠيتوڠ)

---

1 سرات٢ ساتو ݢاريس (لاين) مستي دايسي مڠناکن تيڤ٢ ساتو اورڠ — والو ڤون ساتو انق کچيل — ساتو ݢاريس باݢي ساتو اورڠ.

2 سموا رواڠن مستي دايسيکن تياد بوليه دتيڠݢل کوسوڠ.

3 نام٢ تاوسه دتوليسکن ددالم رواڠن نمبر 1 — تتاڤي بڠسا مستي دماسقکن — جکلو اورڠ٢ ايت بڠسا چينا ڤرکتاءن "چينا" تيادا بوليه دڤاکي — ملك، مستي دسبوتکن بڠساث سڤرت ماکو — هوکين دان لاين٢ث.

4 جکلو عمر (ددالم رواڠن 3) تيادا دکتهوي. تقسيرث مستي دماسقکن.

5 "ڤکرجاءن" (ددالم رواڠن 6) تيادا بولهه تيادا مستي دايسي مڠناکن دڠن تراڠث ڤکرجاءن تيڤ٢ سسئورڠ يڠدماسقکي — باݢي کانق٢ يڠبرعمر کورڠ درڤد 10 تاهن — ترماسق جوا انق٢ کچيل — نام ڤکرجاءنث مستي دماسقکن بݢيني "کانق٢" — باݢي استري، نام ڤکرجاءنث مستي دماسقکن بݢيني "ڤمبلا رومه تڠݢا".

6 اݢام (رواڠن 7) باݢي استري٢ دان کانق٢ منورت اݢام لاکي دان بڤاث.

7 سموا قرطس بنچيان مستي دهنتر باليق کديستريق اوفيس ڤد 1 هاريبولن مرچ.

INSTRUCTIONS TO ENUMERATORS.

---

1. One **whole line** must be filled up in respect of **every** person, even a baby—**one line one person.**

2. **All the column spaces** should be filled—not one should be left blank.

3. No names are required in column No. 1. Only the nationality. In the case of Chinese persons, the word Chinese must **not** be used; but the **bangsa** should be stated, e.g., Cantonese, Hokien, etc.

4. If the age (in column 3) is unknown an approximate age should be entered.

5. The "occupation" (in column 6) must in every case be filled up carefully, stating exactly the nature of work of each person entered on the sheet. In the case of all children under 10, including babies, the occupation should be entered as "child." In the case of a wife, the occupation should be entered as "housewife."

6. The religion (column 7) of wives and children should follow that of the husband and father.

7. All the forms should be sent back to the District Office by March 1st.

戶口調查員應注意之事件

(一)關于每個人．甚至一個嬰孩須填寫全一行．即每個人口應填寫一行是也．

(二)一概空格應該填滿．不得有一空格．留存空白．

(三)第一格不需寫姓名．單獨寫國籍就好．若遇中國人．則勿用「中國人」三字．但須填明其屬何幫人．例如廣府人．福建人等等．

(四)如果不知年歲(第三格)則須填其大約之年齡．

(五)職業(第六格)須各各小心填寫．照表中個人之工作性質．應確確切切寫明其職業．倘若填寫十歲以下之兒童包括嬰孩在內時職業一格．應填作「兒童」．若填寫其妻室時職業一格應填作「主婦」

(六)妻妾及子女之宗教(第七格)應照其丈夫及父親所從之宗教．

(七)壹概填表格式須于三月壹號寄回玻璃主(卽式手緞士彜)

APPENDIX VI.

SHIPPING RETURNS 1930.

Number of steamers, schooners, junks, Malay bandongs, Chinese kotaks and lighters inspected during the year, entering the port of Kuching.

Steamers from Singapore	64
Steamers from Limbang	27
Steamer from Batavia	1
Steamer from Pulo Marandam	1
Native crafts from Bongoran	3
,, ,, ,, Singkawang	2
,, ,, ,, Pamangkat	44
,, ,, ,, Pulo Serasan	6
,, ,, ,, Paloh	1
,, ,, ,, Pulo Siantan	2
,, ,, ,, Pulo Pruantuan	1
	152

TONNAGE FIGURES.

PORTS.	Tonnage.
Singapore	45,458
Batavia	268
Pamangkat	976
Limbang	5,752
Pulo Serasan	32
Singkawang	36
Paloh	3
Pulo Pruatuan	5
Pulo Siantan	60
Pulo Bongoran	5
Pulo Marandam	268
	52,863

APPENDIX VII.

INFECTIOUS DISEASES.

Reported from the Port of Singapore for 1930.

(Note: 86% of the Kuching tonnage, came from Singapore).

MONTH.	Small-pox	Cerebro-Spinal Fever.
January	1	1
February	—	1
March	—	5
April	—	2
May	—	1
June	—	2
July	—	4
August	—	1
September	—	3
October	—	1
November	—	—
December	—	1
TOTAL	1	22

APPENDIX VIII.

TELEGRAPHIC RECORDS 1930.

From the Eastern Arena, as reported to the League of Nation, Bureau at Singapore.

MONTH.	Plague	Cholera	Small-pox
January	17	170	859
February	20	220	1,390
March	26	510	2,628
April	28	354	1,322
May	78	835	882
June	61	424	435
July	53	311	204
August	53	179	156
September	26	130	70
October	19	96	67
November	16	28	74
December	19	49	110
TOTAL	416	3,306	8,197

Note:—Of the above cases, 56·7% of the plague, 99·7% of the cholera, and 96·8% of the small pox occurred in the "critical area" or "Eastern Zymosphere."

APPENDIX IX.

KUCHING STATISTICS OF IMMIGRANTS AND EMIGRANTS (CHINESE).

January to December, 1930.

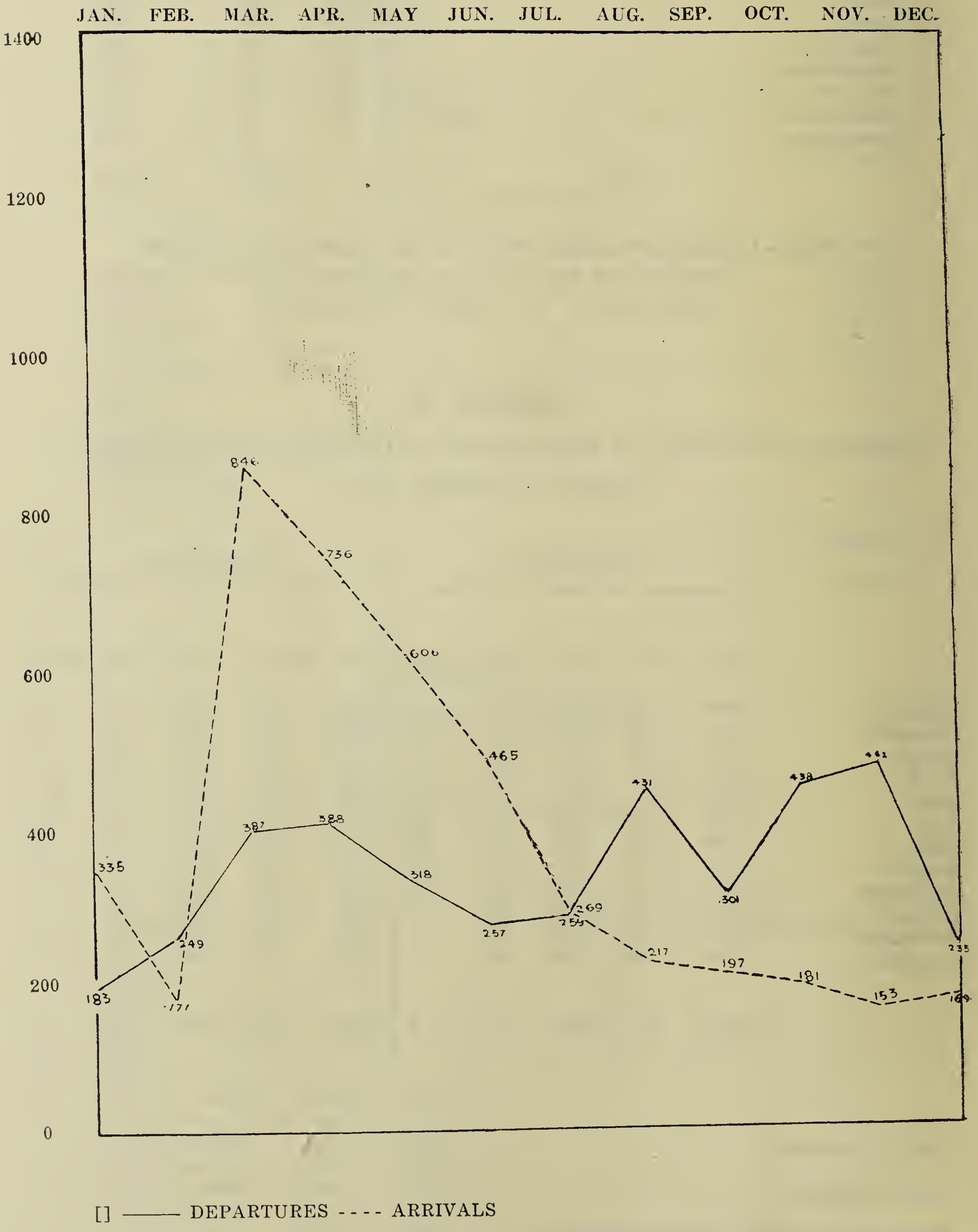
1930	IMMIGRANTS Proportion of Males to Females.					EMIGRANTS. Proportion of Males to Females.				
	Male	Female	Total	Male	Female	Male	Female	Total	Male	Female
January	300	35	335	9.	.1	160	23	183	8.7	1.3
February	156	15	171	9.1	.9	214	35	249	8.6	1.4
March	726	120	846	8.6	1.4	331	56	387	8.6	1.4
April	620	116	736	8.4	1.6	301	87	388	7.8	2.2
May	449	157	606	7.4	2.6	250	68	318	7.9	2.1
June	332	133	465	7.1	2.9	226	31	257	8.8	1.2
July	199	65	264	7.5	2.5	236	23	259	9.1	.9
August	164	53	217	7.5	2.5	367	64	431	8.5	1.5
September	181	16	197	9.2	.8	267	34	301	8.9	1.1
October	167	14	181	9.2	.8	368	70	438	8.4	1.6
November	143	10	153	9.3	.7	416	46	462	9.0	1.0
December	159	10	169	9.4	.5	203	32	235	8.6	1.4
	3596	744	4340	8.3	1.7	3339	569	3908	8.5	1.5

	Male	Female	Total
Total Immigrants	3596	744	4340
Total Emigrants	3339	569	3908
Balance of Immigrants over Emigrants	287	175	432

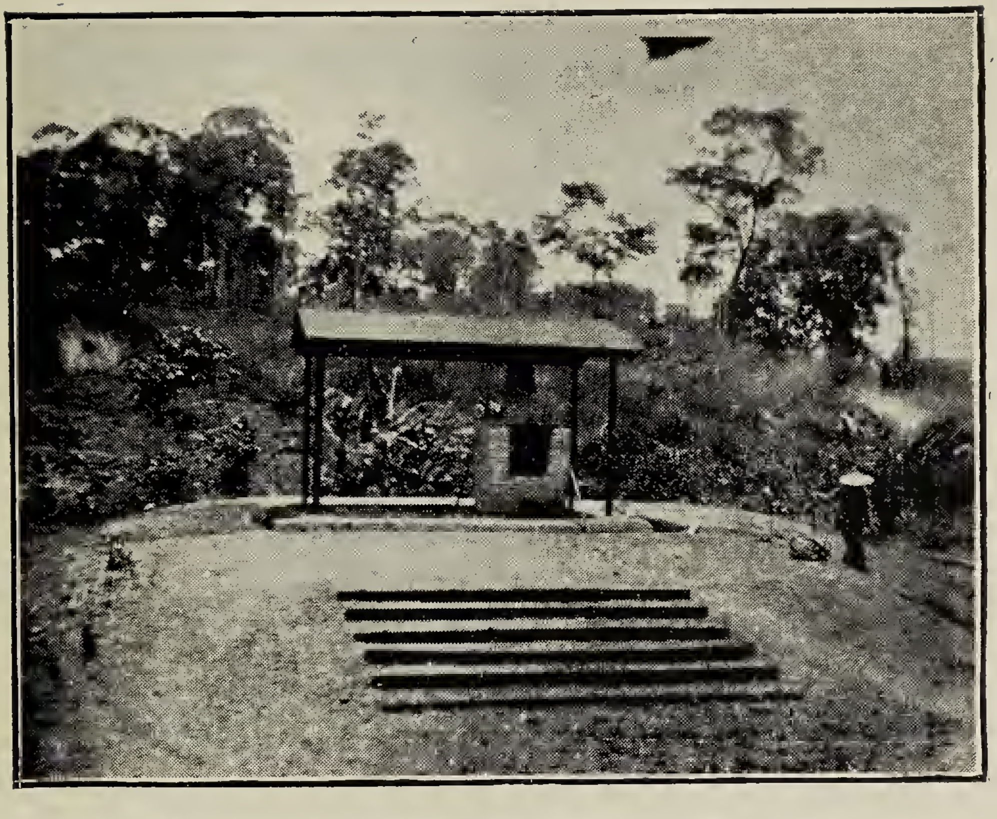
APPENDIX X.

GRAPHICAL STATISTICS OF DEPARTURES ARRIVALS CHINESE.

1930.



APPENDIX XI.



One of the three Incinerators built in the Leper Camp.

Making of Reservoir at the Leper Camp.

APPENDIX XI—(contd.)

Canalization of Stream in Sungei Bedil Kechil.

Canalization Completed.

APPENDIX XI—(contd.)

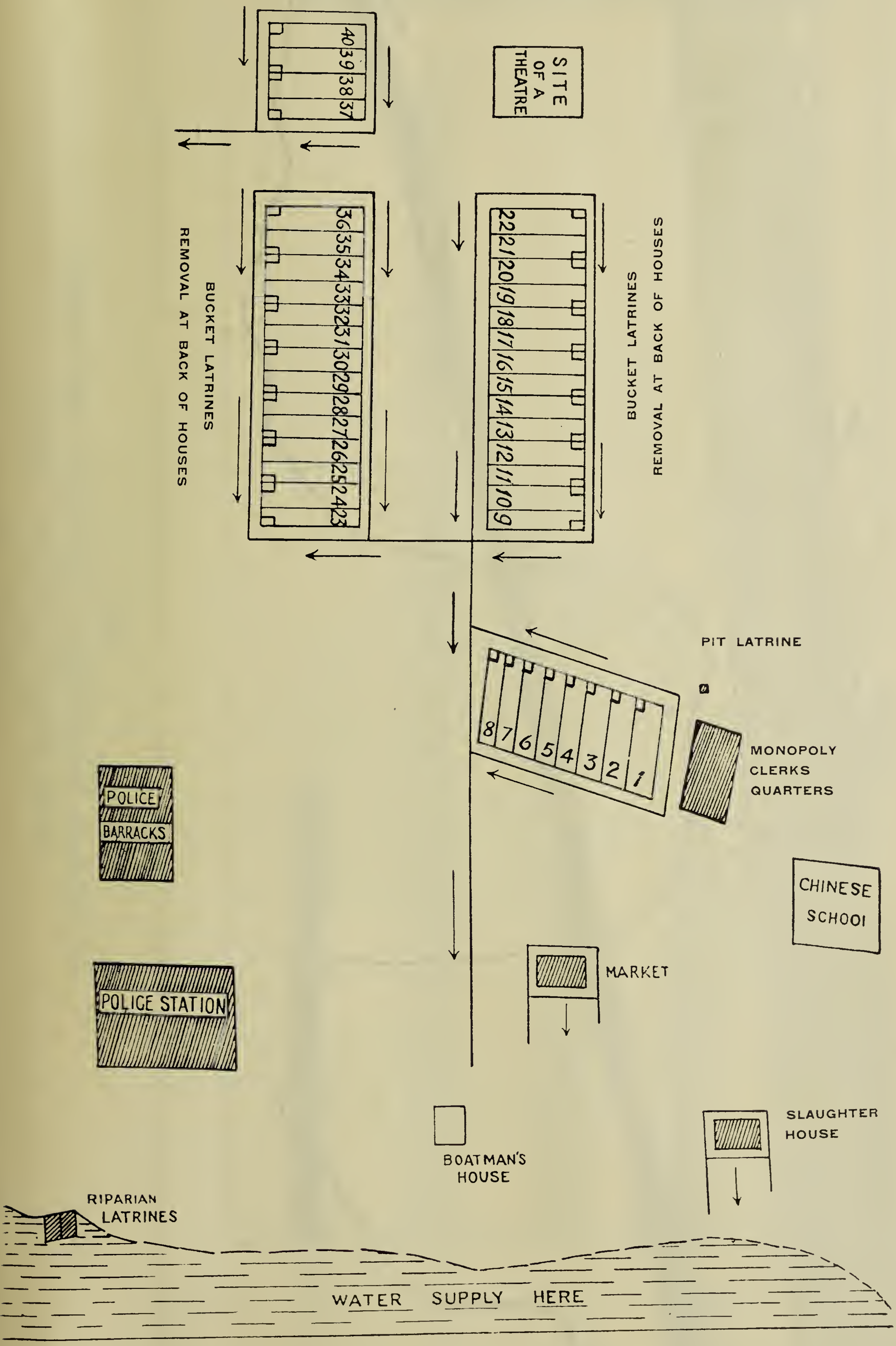
Straightening a Stream, Leper Camp.

Widening of Reservoir, Leper Camp.

APPENDIX XII.

SKETCH SHOWING THE SANITARY ARRANGEMENT OF BUCKET LATRINES IN THE BAZAAR HOUSES OF BATU KAWA.

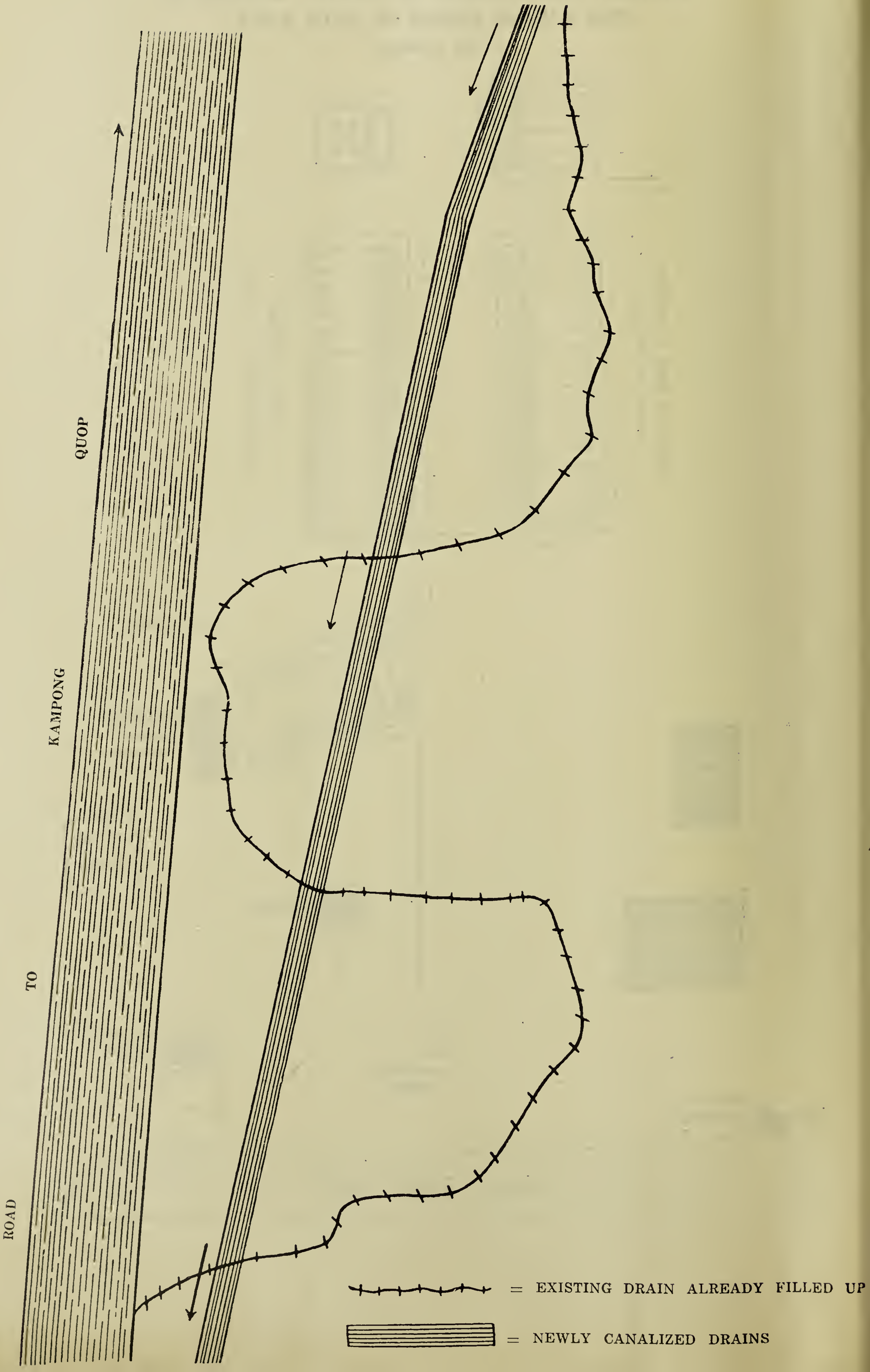
Not to Scale.



APPENDIX XIII.

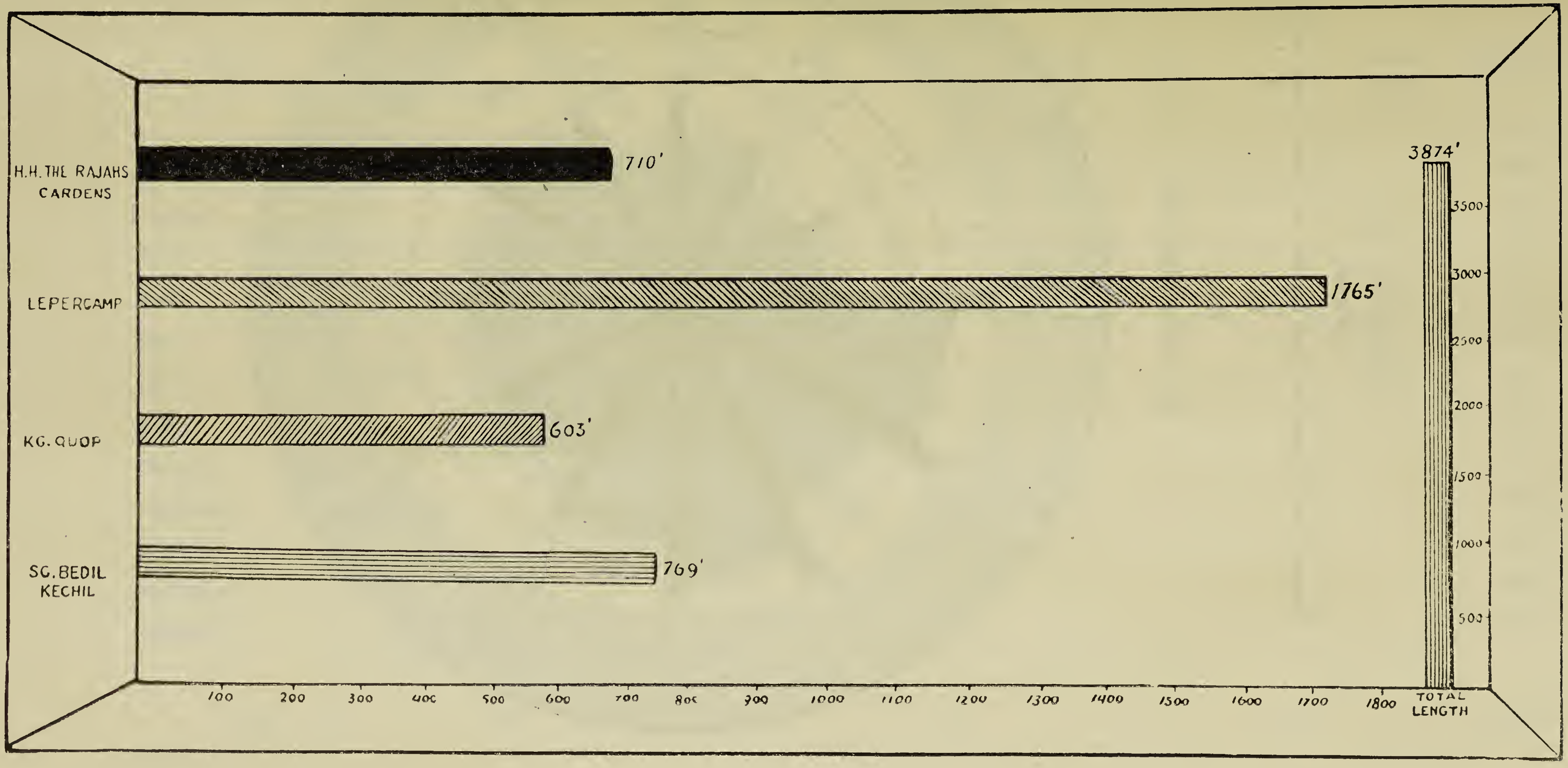
SKETCH SHOWING THE DRAINAGE OF KG. QUOP AND THE NEWLY CANALIZED DRAIN.

Not to Scale.



APPENDIX XIV.

CHART SHOWING THE TOTAL LENGTH OF DRAINAGES CONSTRUCTED IN THE RURAL AREA DURING 1930.



APPENDIX XV.

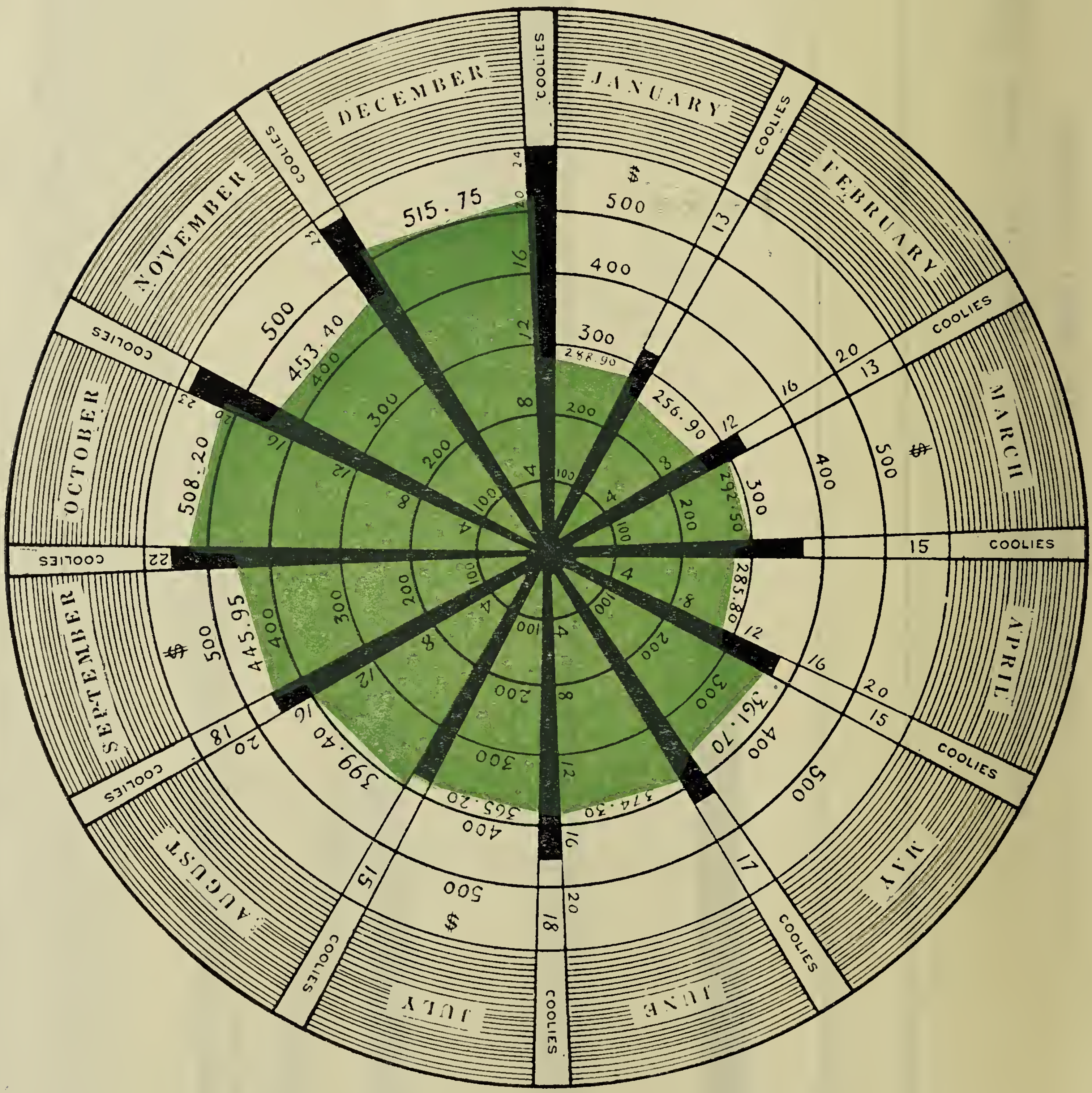
GRAPH.

Showing the Expenditure and the No. of Labour force monthly.

for

1930.

IN RURAL SECTION.



APPENDIX XVI.

HYDRODYNAMIC INFECTIONS, REPORTED IN KUCHING FOR 1930.

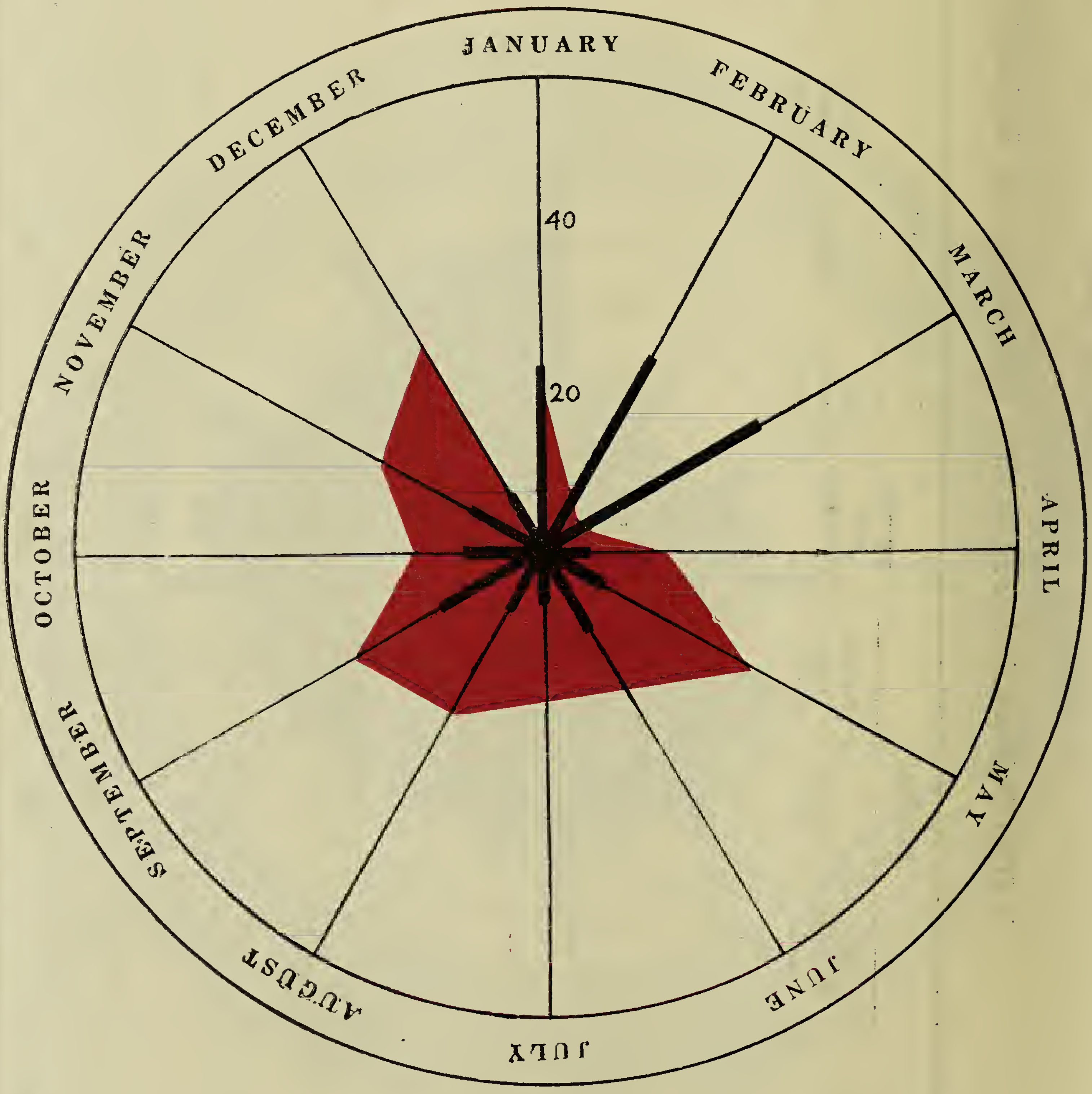
1930	MALARIA			FEVER NOT SPECIFIED	DYSENTERY			TYPHOID.			RAIN IN INCHES
	In Municipal area	Imported	Kuching rural section		In Municipal area	Imported	Kuching rural section	In Municipal area	Imported	Kuching rural section	
January ..	3	5	1	43	1	—	—	2	—	—	33.19
February ..	—	—	1	94	—	—	—	—	—	1	9.89
March ..	2	4	10	83	1	—	—	2	—	—	13.47
April ..	—	2	6	71	—	—	—	1	—	3	8.9
May ..	—	4	12	106	1	—	—	4	1	—	5.12
June ..	—	2	12	125	4	—	—	7	—	4	6.88
July ..	—	5	25	110	7	—	—	2	—	2	5.33
August ..	—	3	6	107	5	—	—	2	—	2	4.16
September ..	1	1	5	137	18	—	—	—	—	—	5.53
October ..	6	3	25	154	2	—	—	1	—	—	15.98
November ..	4	3	42	134	1	—	—	1	—	1	16,28
December ..	—	4	36	147	1	—	—	—	—	—	17.2
	16	36	181		41	—	—	22	1	13	
TOTAL ..	233			1,311	41			36			140.93

APPENDIX XVII.

DATA MALARIA AND RAINFALL
KUCHING.
1929.

ESTIMATED POPULATION 24,943.

MALARIA 🟥 RAINFALL ⬛

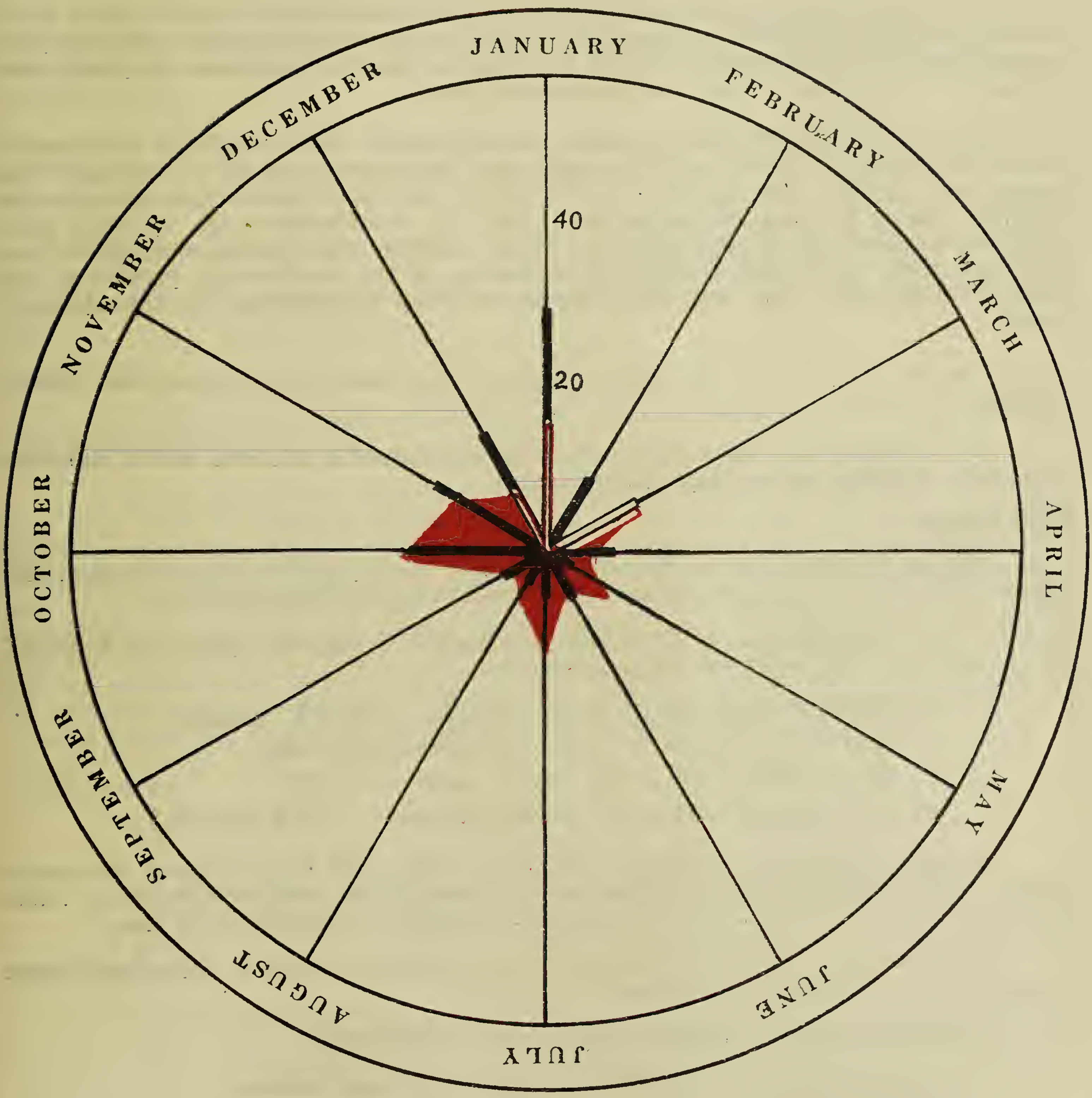


APPENDIX XVIII.

DATA MALARIA AND RAINFALL
KUCHING.
1930.

ESTIMATED POPULATION 25,293.

MALARIA 🟥 RAINFALL ⬛



APPENDIX XIX.

REPORT ON ANTI-MOSQUITO CONTROL.

BY

W. J. HUTCHINSON,
Assistant Health Officer.

Across River.

During September, considerable numbers of mosquitoes were found in houses. Search was made for larvae on two occasions (September 25 and October 8).

Of 8 specimens collected the first day 2 were identified as A. umbrosus, and of 6 collected on 2nd day 1 was umbrosus.

In September also the kampongs along the river front and the rubber gardens immediately behind these were visited; here larvae of aedes and culex were found in abundance.

As there is almost undoubtedly present in the kampongs subjects whose blood is infective for mosquitoes, and as umbrosus is found with considerable frequency, it seemed desirable that attention should be given to the limitation of anopheles and especially A. umbrosus in this new residential area.

A drain of some 300 feet in length has been dug. This entailed a considerable amount of clearing of thick bush. It opens into the upper part of a "Sungei" the Sungei Bedil Kechil. The banks of its "feeders" have been cleared; the straightening of their courses is being proceeded with now. A considerable area is being more effectively drained by these measures, and in particular A. umbrosus breeding places have been dealt with. The small stream and its feeders in the small valley parallel to and west of the road has been dealt with, the course being straightened and the edges cut clean.

During the past months adults found in the houses are considerably less in number.

It is thought that these drains should be maintained in this area, and A. umbrosus (especially breeding places) kept under control.

Quop Village.

During the latter end of September malaria was reported to be prevalent at this village. On investigation the disease was found to be very prevalent, viz.—

a. In September of 17 children examined 5 = enlarged spleen, and 5 showed B.T. parasites in their blood.

b. On October 10th of 21 smears, 6 were + for B.T. malaria;

c. On October 24th of 15 smears, 2 showed B.T. rings;

d. On November 7th of 6 smears, 3 were + for B.T.

e. On December 30th of 19 smears, 13 were + (11 B.T.; 2 M.T.).

At first Anophelines were found biting even during the day in shade in the nearby jungle. Subsequently adult anophelines mostly leucosphyrus, and culicines were found in houses, while both in and out of doors aedes scutellaris was found with ease.

While patients were being examined by me during my visits to the village, larvae were collected by Mosquito Collectors.

48 specimens were collected, which were identified thus:—

A. leucosphyrus	12	—found	in	adjacent jungle streams.
A. barbirostris	9	„	„	streams and wells.
A. sinensis	1	only	„	a pig pond.
A. umbrosus	5	„	„	ponds, wells and streams.
A. vagus	1	„	„	a rocky pool.
A. maculatus	4	„	„	streams.
A. aitkeni (type 2)	6	„	„	jungle stream heavily shaded not far from the village.
A. tesselatus	2	„	„	streams very near the village.

In addition 2 specimens of M. uniformis in a pond, and 6 larvae of A. scutellaris in rock holes and cut bamboos, were collected, the adults of the latter species being found in great abundance.

Work carried out.—Previously A maculatus had been found in road-side drains and adjacent streams on main road. The possibility of its introduction in the neighbourhood of Quop was obvious. Therefore the streams, which are numerous, had their courses straightened to some extent, and their edges trimmed. Beyond this no clearing of undergrowth was carried out. By the beginning of November there were but few cases of fever and of these 6, from which smears were taken 3 showed B.T. parasites. Subsequently, during the paddy—sowing season numbers of the villagers lived for some days or longer in the jungle near where they sowed their rice, and there were numerous opportunities for infection with malaria.

By the end of December was more malaria than when the village was first visited in October; this in spite of the work carried out, the fact that larvae were few where at the outset numerous specimens were found, and adult anophelines were not numerous in houses.

The result is disappointing, but in my opinion, the work done has been worth while, and from the point of view of malaria Quop is in a better position than it would have been, if attention had not been given to it. Quinine was also given for distribution headman there.

Yaws was found to be very prevalent. For this condition 75 injections were given to patients who proceeded to the Leper Camp where the injections could most conveniently be given.

I think it probable that both maculatus and leucosphyrus are vectors at Quop.

Umbrosus may be a carrier too but I think that here it is, at all events, not an important one.

Leper Camp.

Seven cases of malaria occurred in the camp in November and December which were fresh infections.

A larval survey was made and the results are shown on the map. It will be seen that some 11 different species are all found in the area. Of these maculatus, umbrosus, and leucosphyrus are important. The gully from behind the Superintendent's bungalow to the main stream in the camp is thickly wooded, and harbours much umbrosus. With A. maculatus in the vicinity, however, clearing must be done with circumspection. Therefore in these gullies the bush will be cleared back but slightly and the courses cut—in straight lines, and with clean cut edges—only where a good flow of water will be found. During the first fortnight of January, drains by the side of the main road were cleared. The edges of the main stream from the road to the wooden bridge near the mortuary were cleared, and in places straightened.

Work in view.

1. Seepages can be dealt with by filling, viz., close to the main stream.
2. Cutting a few small drains into the gullies mentioned above.
3. Oiling in a few places where water remains stagnant for a time.

In the absence of an outbreak of further cases, I do not think further measures are desirable.

a. Breeding places are extensive (of non-vector species for the most part), and to deal with even a limited area entails a great deal of work. (*e.g.* clearing sides of main drain so far has occupied an average of 4 coolies 2 weeks).

b. Oil should be restricted to the few places where it will be effective.

c. Clearing which may allow of the entry of maculatus must be avoided.

The measures I have outlined will be completed by about the end of the month. Maintenance of the drains cleared or made afresh should however be continued.

APPENDIX XX.

ANNUAL REPORTS OF THE KUCHING-RAT-CAMPAIGN FOR THE YEARS 1929 & 1930.

YEARS	TOTAL CAUGHT	RATTUS		DECUMANUS		MICE		ALIVE	FLEAS		TICKS	INFECTED WITH CYSTICERCUS		HEALTHY
		M.	F.	M.	F.	M.	F.		M.	F.		Rattus	Decuman	
1929 ..	7,381	2,760	4,057	74	123	146	221	2,054	546	714	3,313	3,457	139	3,785
1930 ..	9,800	3,104	4,419	581	882	262	552	1,977	1,127	1,246	2,269	3,463	955	5,382
		5,864	8,476	655	1,005	408	773		1,673	1,960		6,920	1,094	
	17,181	14,340		1,660		1,181		4,031	3,633		5,582	8,014		9,167

G. E. RUETENS.

Acting Sanitary Inspector

Pateomics.

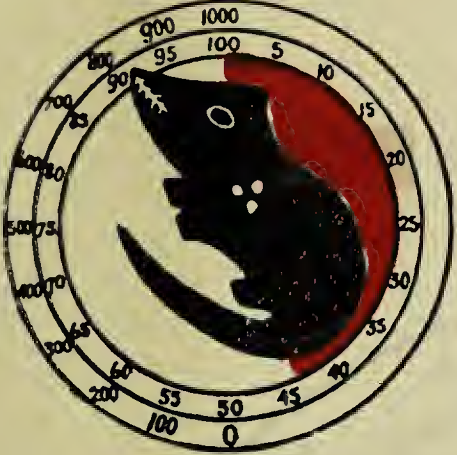
APPENDIX XXI.

KUCHING MUNICIPALITY.

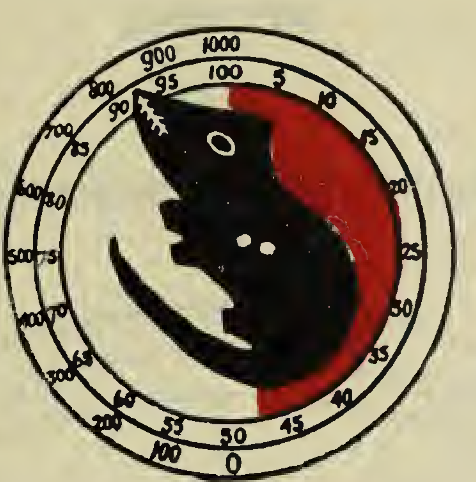
RAT INVESTIGATION.

1930.

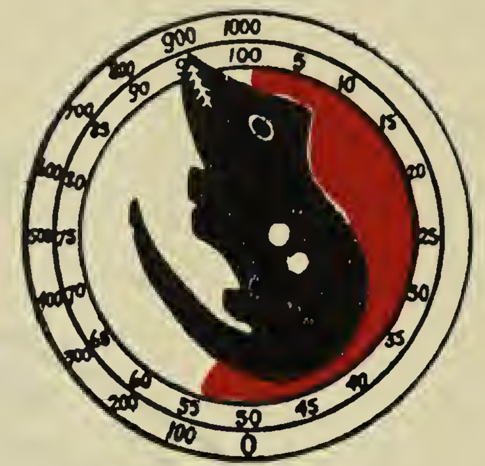
JANUARY



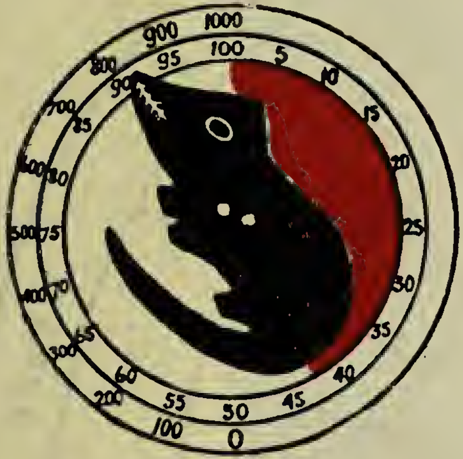
FEBRUARY



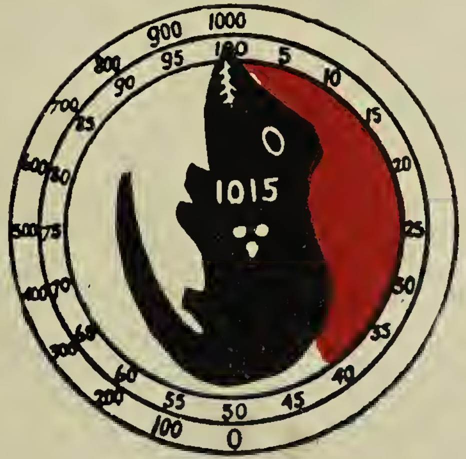
MARCH



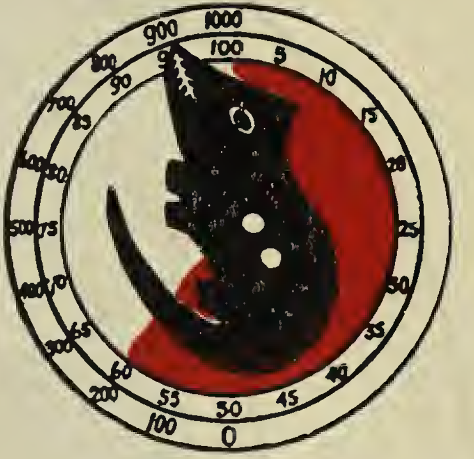
APRIL



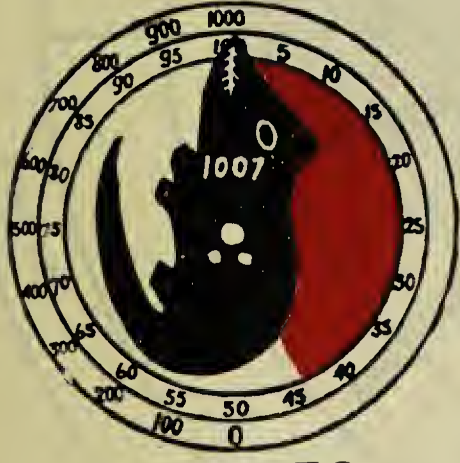
MAY



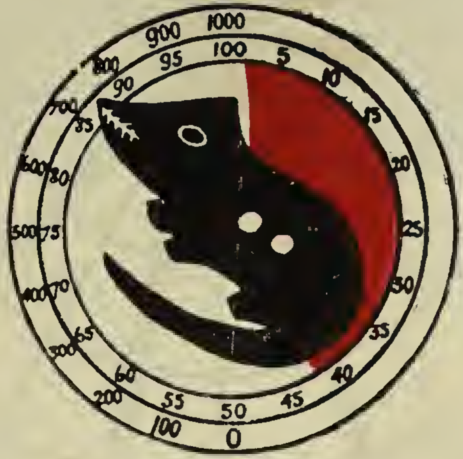
JUNE



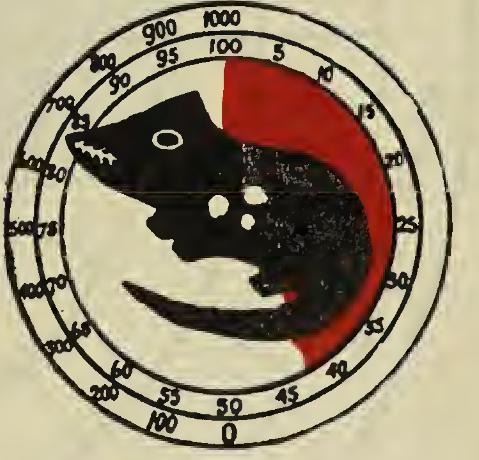
JULY



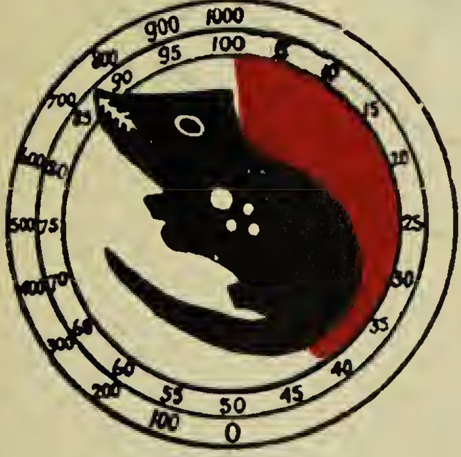
AUGUST



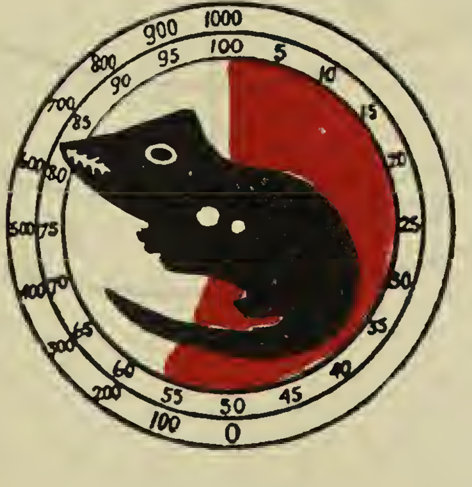
SEPTEMBER



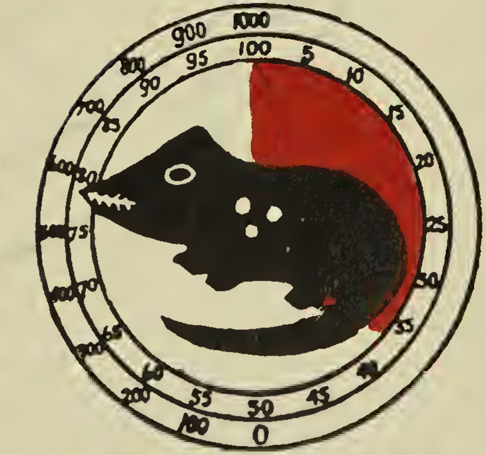
OCTOBER



NOVEMBER



DECEMBER



NOTE:—White spots on rats indicate average number of fleas per rat.
(Large spot = 1; Small spot = ¼).

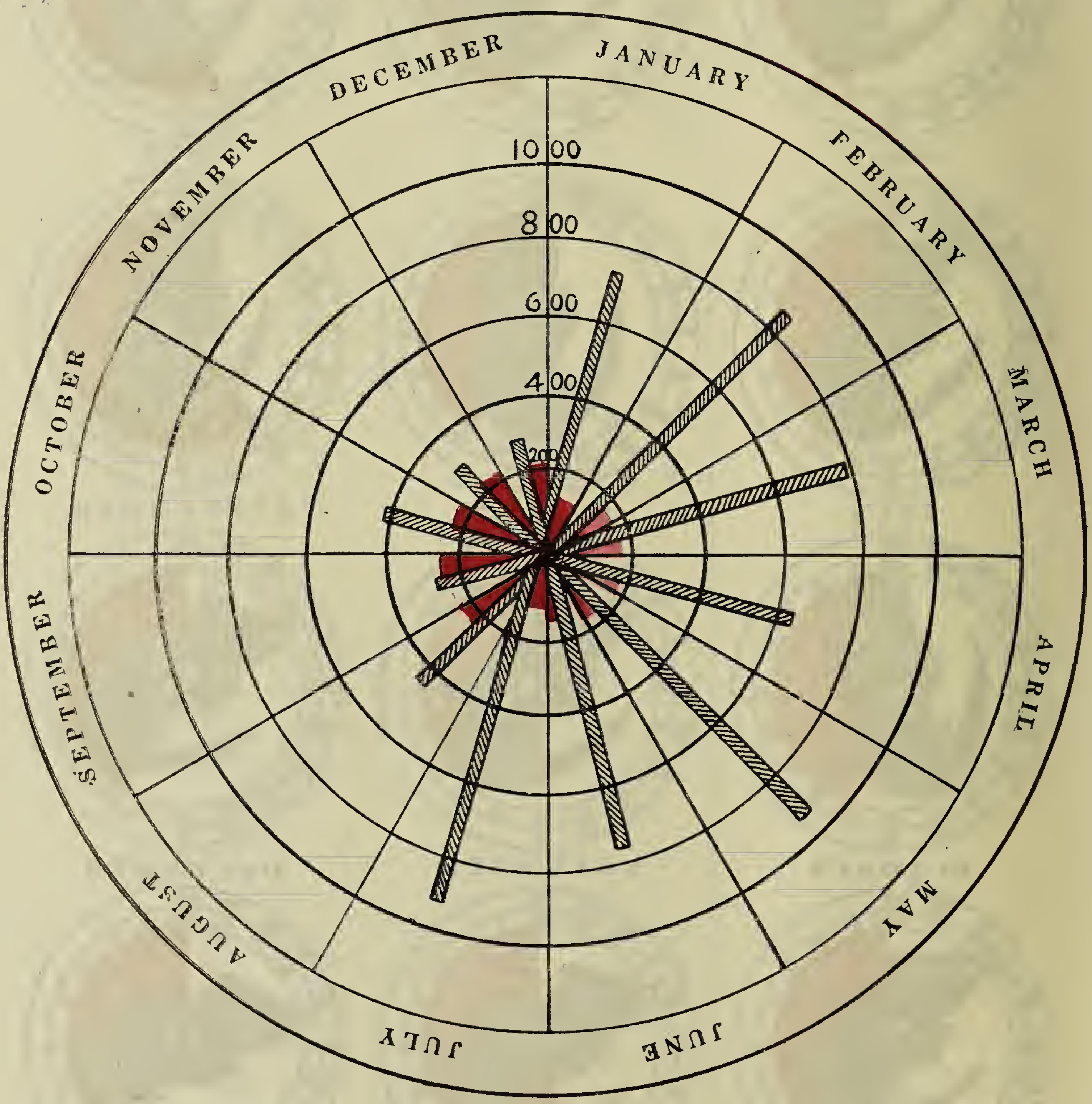
APPENDIX XXII.

RAT DISTRIBUTION

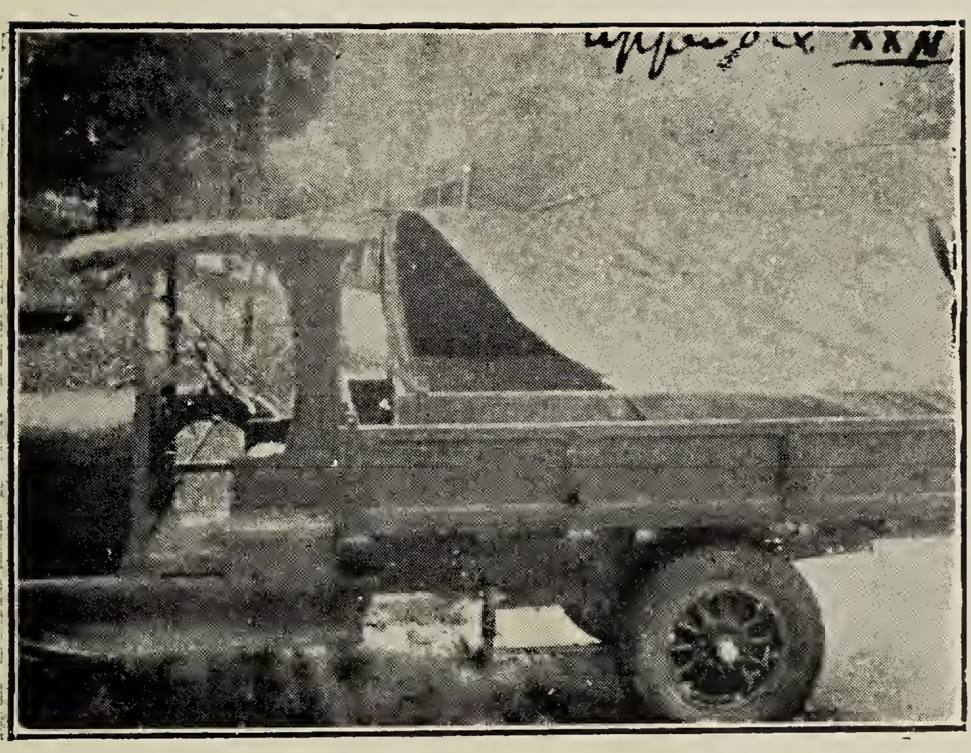
KUCHING.

1930.

RATTUS ▨ DECUMANUS 🟥



APPENDIX XXIII.



Zinc-lined lorry, with cover, for conveying carcases to the meat markets.

APPENDIX XXIV.

ANIMALS SLAUGHTERED DURING 1930 AT THE MUNICIPAL SLAUGHTER HOUSES.

MONTHS.	Pigs	Goats	Deer	Cattle	Buffaloes
January	1,009	27	—	1	54
February	849	23	—	1	59
March	962	8	—	1	54
April	878	19	—	—	46
May	987	17	—	14	36
June	896	16	1	6	40
July	987	15	—	7	25
August	974	7	—	5	41
September	906	27	—	2	37
October	914	19	—	2	36
November	912	21	—	2	33
December	930	40	—	12	28
	11,204	239	1	53	489

Total slaughtered = 11,986 as compared with 10,233 in 1928 and 11,235 in 1929.

APPENDIX XXV.

KUCHING MILK DATA 1930.

(a) **Tinned Importations.**

(Expressed as potable dilutions)

	Pints per annum.
Condensed	1,802,900
Sterilized	7,232
Evaporated	6,695
Dried	17,664
Total pints ..	1,834,491

(b) Dairies.

(i) Government Dairy	31,390
(ii) Private Dairies	25,185
Total pints consumed	1,891,066

This is equivalent to 5,181 pints per diem, equal to .20 pints (= 4 pt. oz.) per head for each man, woman and child, of the estimated population.

FRESH MILK FROM DAIRIES.

Government Dairy	86 bottles (1 pint) per day.
Private Dairies	69 bottles (1 pint) per day.

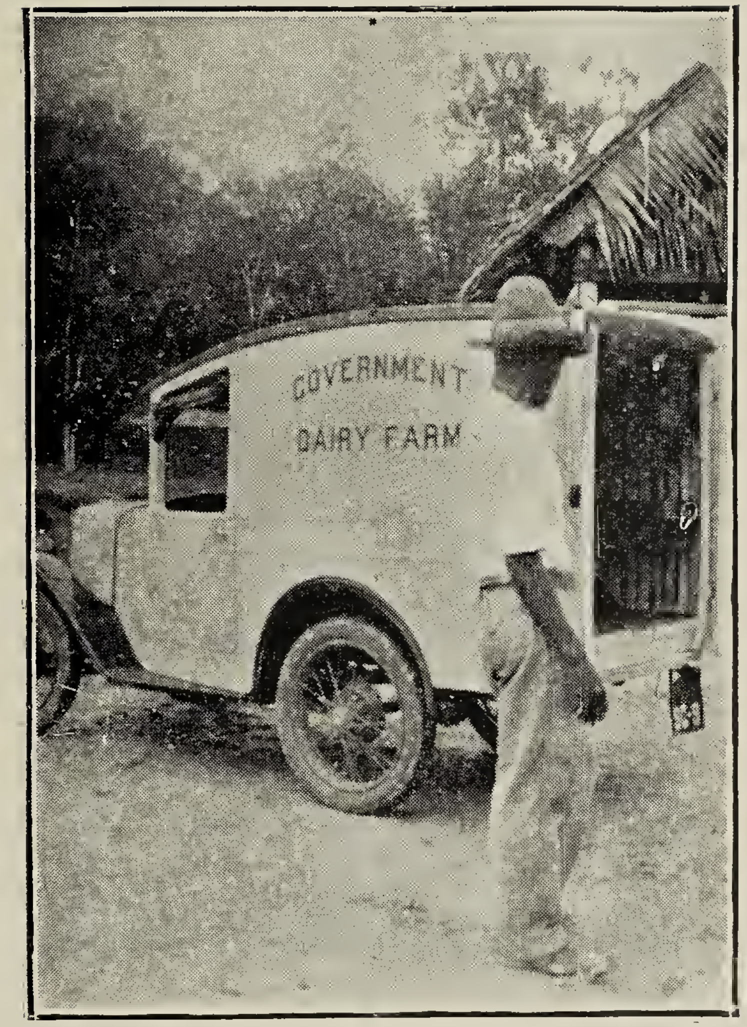
DAIRIES.

DAIRIES	Cows	Muilch Cows	Buffa-loes	Muilch Buffa-loes	Goats	Deer	Calves	REMARKS
1. Government ..	22	15	5	3	15	—	57	4 Bulls
2. Kee Ong ..	8	5	—	—	—	—	18	2 Bulls
3. Tiang Swee ..	7	10	—	—	—	56	13	1 Bull
4. Nasroole ..	8	4	5	—	—	—	7	1 Bull and 2 babies Buffalo

CATTLE SHEDS.

CATTLE SHEDS	Cows	Bulls	Calves	REMARKS
1. Sangarni ..	7	—	6	No milk
2. Barnabas ..	4	—	2	No milk
3. Vendarnai ..	3	—	2	No milk
4. Eng Hay ..	11	1	6	No milk
5. Velimay ..	2	—	1	No milk

APPENDIX XXVI.



A converted Austin Delivery Van.

نصيحت كڤد ڤنجاݢ كانق٢

جاݢاكن كانق٢ يابوندا سكلين !!

1 ـ كانق٢ يڠ صيحت اڤبيل بسرڽ اكن منجادي صيحت جوا.

2 ـ كانق٢ يڠ منوسو سوسو مأڽ اياله سهابيس٢ باݢوس.

3 ـ جكلو سوسو مأڽ تيادا چوكڤ باڽق باروءله بري ماكن سوسو ساڤي ددالم تيڤ٢ امڤت جم سكالي.

4 ـ جاڠن مماكي بوتول دڠن كته ڤنجڠ-سلالو ڤاكي بوتول „ايلينبيري“ يڠادا سديا كته (ڤيڤيت) دمولوتڽ.

5 ـ سلالو مستي بري ماكن كانق٢ ايت دڠن سوسو يڠ هابيس بايك جكلو ادا برداي ممبليڽ.

6 ـ سلالو چوچيكن بوتول دڠن اير ڤانس اڤبيل هابيس دڤاكي جكلو تيدق دچوچي ننتي سوسو يڠ هندق دتاروه ددالمڽ اكن منجادي ماسم ددالم ڤروت كانق٢ ايت.

7 ـ جكلو بوليه جاڠن دبيركن كانق٢ مڠيسڤ ڤيڤيت يڠ فواڠ كارن منجادي اڠين ددالم ڤروتڽ ـ جكلو ماسيه كانق٢ هندق مڠيسڤ ايكتكن ڤيڤيت ايت دليهيرڽ سڤاي جاڠن جاتوه دلنتي كوتور يڠ بوليه ممباوا ڤڽاكيت كڤدا كانق٢ ايت.

8 ـ سوسو ايتوله ماكنن كانق٢ يڠبرعمر سمڤي 6 بولن ـ جاڠن سكالي٢ دبري ماكن ناسيء اتو ڤيسڠ اتو ڤون لاين٢ ماكنن سمڤي عمرڽ لبه درڤد 6 بولن.

9 ـ جكلو كانق٢ ايت ادا دمم اتو باتوق اتو بيرء اير اتو ݢاتل (مرانس) سݢرا باواكنڽ كڤد دقتور سڤاي بوليه داڤت اوبت يڠ بتول.

10 ـ كانق٢ هندقله برچوڠكيت اڤبيل عمرڽ دانتارا 3 بولن سمڤي 6 بولن.

كانق٢ مستي ماوء برسيه
رومه مستي ماوء برسيه
سنديري مستي ماوء برسيه
كاين باجو مستي ماوء برسيه

اداڤون سبب٢ ڤڽاكيت ايت اياله درڤد كوتور ـ مك كومن٢ (ادأ٢) ڤڽاكيت ديمڽ ددالم دبو دان كوتور٢.

سلالو مستي ماوء برسيه

Printed at the Diocesan Press, Kuching.

你等爲母親者，須留心看顧你的孩兒！

一個康健的孩兒。長大爲一個康健的成人。

孩兒最好喂以人乳。

若使人乳不夠用。可以用上等牛乳入落乳罐。按定時候每四點鐘。給孩兒食一次。

切不可用長樹膠帶之乳罐。須常用「亞倫伯里」乳罐以乳頭安置在乳罐頭上者也。

宜用上好之牛乳來供給孩兒。

乳罐用後。須常時用熱水洗淨。乳罐若不清潔。在下次所食之乳。將在孩兒肚內。變爲酸味。

宜避用假乳頭（空乳嘴）。因孩兒吸空乳嘴。則肚內生風。

如不得已要用空乳嘴・則用線縛之。掛在孩兒頸項。免致跌落在污穢地上。使孩兒吸後生病。

自出世至六個月孩兒。單食乳可也。未上六個月之孩兒切切不可以粥飯。弓蕉或別種食物俾孩兒食也。

如孩兒發熱。或有咳嗽。或患瀉痢。或皮膚發疹時。須常時立刻抱他到醫生處診看・且取對症之藥調治。

孩兒在三個月至六個月內應爲之種痘（種珠）。

子女須使之清潔

房屋須使之清潔

你自己須使之清潔

衣服須使之清潔

病是由污穢之物所致。及病菌活存在塵垢糞土之中。

故宜常常保守清潔。

古晉楊醒凡印務局承印

APPENDIX XXIX.

LEPER CAMP REGISTER.

Registered Number.......................... *Correspondence File No*......................

Name..

Race....................*Age*..................*Sex*...................

Date of Admission........19........*Place orOrigin*............*Admitted by request of*....................

Photograph of Patient

Summary of each month's Treatment:—

(Continue overleaf if necessary)

Past History:—

Date of Pathological Examinations:—

(Continue overleaf if necessary)

Condition on Admission:—

Final Result:—

Signed..................................
Medical Officer.

Signed..........................
Chief Health Officer.

Signed..................................
Superintendent Leper Camp.

APPENDIX XXX.

No.............

OFFICE COUNTERFOIL.

A..

B..

C..

D..

Sundries:—

Item.	Quantity
....	....
....	....
....	....
....	....
....	....
....	....

Date of Order.......................

Clerk's Initials......................

No.............

ACKNOWLEDGMENT.

Note:—This form should be returned by the Contractor to the Health Office.

Date of Supply............19 ....

A..

B..

C..

D..

Sundries:—

Item.........Quantity........
,, ... ,, ...
,, ... ,, ...
,, ... ,, ...
,, ... ,, ...
,, ... ,, ...

Received as above in good order.

Signed..............................

Supt. Leper Camp.

No.............

LEPER CAMP INDENT.

Notes—This form should be affixed to the Contractor's monthly bill when presented.

To Messrs..........................*Contractors.*

Govt. Lorry a.
PLEASE supply to——————at .... –m.
Health Office p.

to-morrow the........ inst., the following:—

Diet A. Quantity required............
,, B. ,, ,, ...
,, C. ,, ,, ...
,, D. ,, ,, ...

Sundries:—

Item No.........Quantity required........
,, ,, ... ,, ,, ...
,, ,, ... ,, ,, ...
,, ,, ... ,, ,, ...
,, ,, ... ,, ,, ...
,, ,, ... ,, ,, ...

Signed..............................

Chief Health Officer.

Kuching,.....................*19*........

APPENDIX XXXI.

Schedule IV.

THE GOVERNMENT OF SARAWAK

in account with..Contractor

No..........................

Date								Total	At rate	$	Cts.
Diet A											
Diet B											
Diet C											
Diet D											
Sundries											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
Lorry Hire											

E. & O. E.

TOTAL $

....

Contractor.

Received Payment

Checked by

....

Approved

....

Contractor.

....

Chief Health Officer.

APPENDIX XXXII.

INTELLIGENCE REPORT, LEPER CAMP.

Saturday Evening . . . . **19** . . . .

	Lepers remaining on previous Saturday	Admitted during the week	Died during the week	Absconded during the week	Discharged during the week	Now Remaining
Malays . .						
Dyaks . .						
Chinese . .						
Tamils & others . .						
Totals . .						

Remarks:—

Superintendent L. Camp.

APPENDIX XXXIII.

SCALE OF DIETS FOR THE LEPER CAMP—KUCHING.

Schedule I. Sundries, Extras, etc.

1.	Blankets*	Per	50.
2.	Clothing for men*	„	Suit.
3.	Clothing for Women*	„	Suit.
4.	Cooking pots (iron)*	„	50 pots of 4 pints each.
5.	Daun Roko	„	25 ties of 3 leaves each.
6.	Kerosene (Crown)	„	Case of 2 tins.
7.	Lamps (tin)*	„	50 lamps.
8.	Matches	„	Case of 240 packets.
9.	Mats*	„	50 mats.
10.	Mosquito nets*	„	50 nets (ready made).
11.	Pinang nuts	„	Kati.
12.	Plates (enamelled)	„	100 plates.
13.	Sireh	„	Bundle of 30 leaves.
14.	Soap (bar, yellow)	„	Case of 20 bars.
15.	Tea (Chinese)	„	Packet of 4 tahils.
16.	Tobacco (Chinese)	„	Packet of 8 tahils.
17.	Tobacco (Java)	„	Tahil.

Schedule II.

18.	Lorry hire to 13th mile and return	Per	trip.

Schedule III.

19. Diet **A** (for Malays):—

Daily	Rice (local milled, or Siam No. 2)	1½ lbs.
	Krebang (or labu merah)	4 tahils
	Salt fish	4 tahils
	Onions	1 tahil
	Salt	½ tahil
	Coconut oil	2 tahils
Once a week	Beef (ox of buffalo) on Wednesdays	1 kati.
	Fresh fish (any day available except W'days)	8 tahils

20. Diet **B** (for Dyaks and Tamils):—

Daily	Rice (local milled, or Siam No. 2)	1½ lbs.
	Krebang (or labu merah)	4 tahils
	Salt fish	4 tahils
	Onions	1 tahil
	Salt	½ tahil
	Coconut oil	2 tahils
Once a week	Pork on Wednesdays	8 tahils
	Fresh fish (any day available except W'days)	1 kati.

21. Diet **C** (for Chinese):—

Daily	Rice (local milled, or Siam No. 2)	1½ lbs.
	Krebang (or labu merah)	4 tahils
	Salt fish	4 tahils
	Onions	1 tahil
	Salt	½ tahil
	Lard	1 tahil
Once a week	Pork on Wednesdays	8 tahils
	Fresh fish (any day available except W'days)	1 kati.

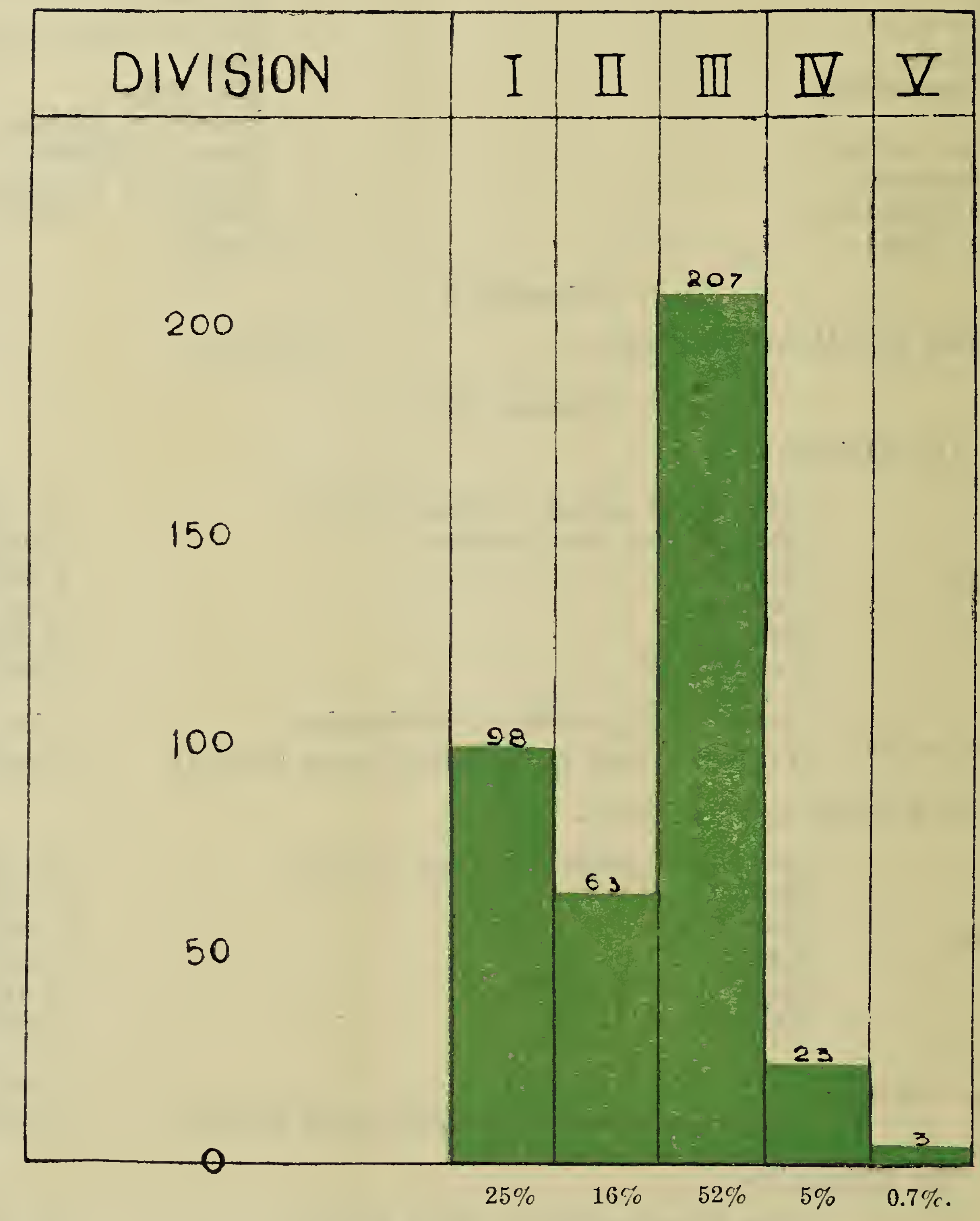
22. Diet **D** (Milk Diet):—

Condensed milk	1 ounce avoirdupois
Sago	1 tahil
Rice	2 tahils
Sugar	1½ tahils
Salt	¼ tahil
Bread	2 small loaves.

APPENDIX XXXIV.

LEPER CAMP POPULATION, DECEMBER, 31st, 1930.

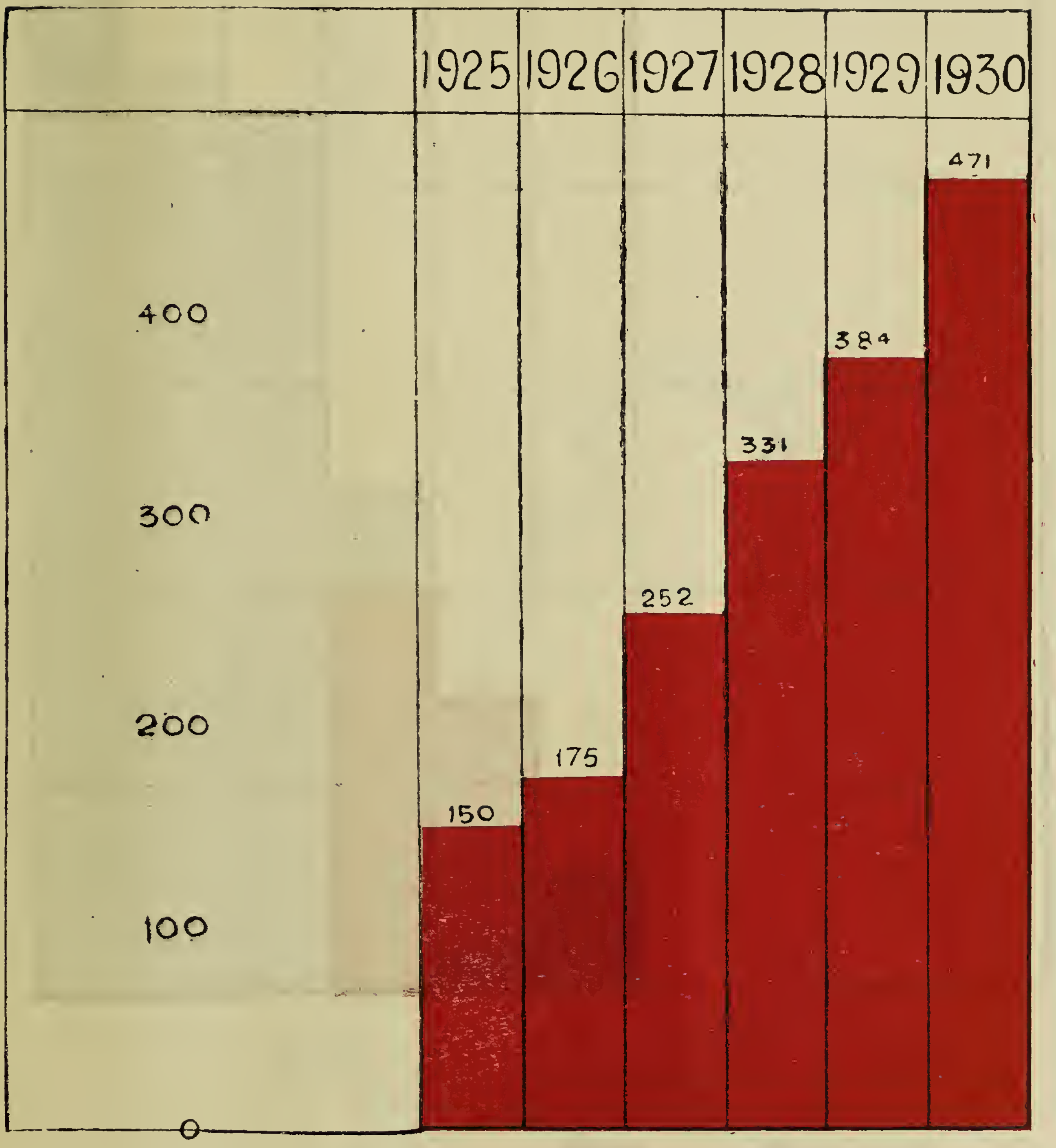
TERRITORIAL DERIVATION.



APPENDIX XXXV.

LEPER CAMP KUCHING.

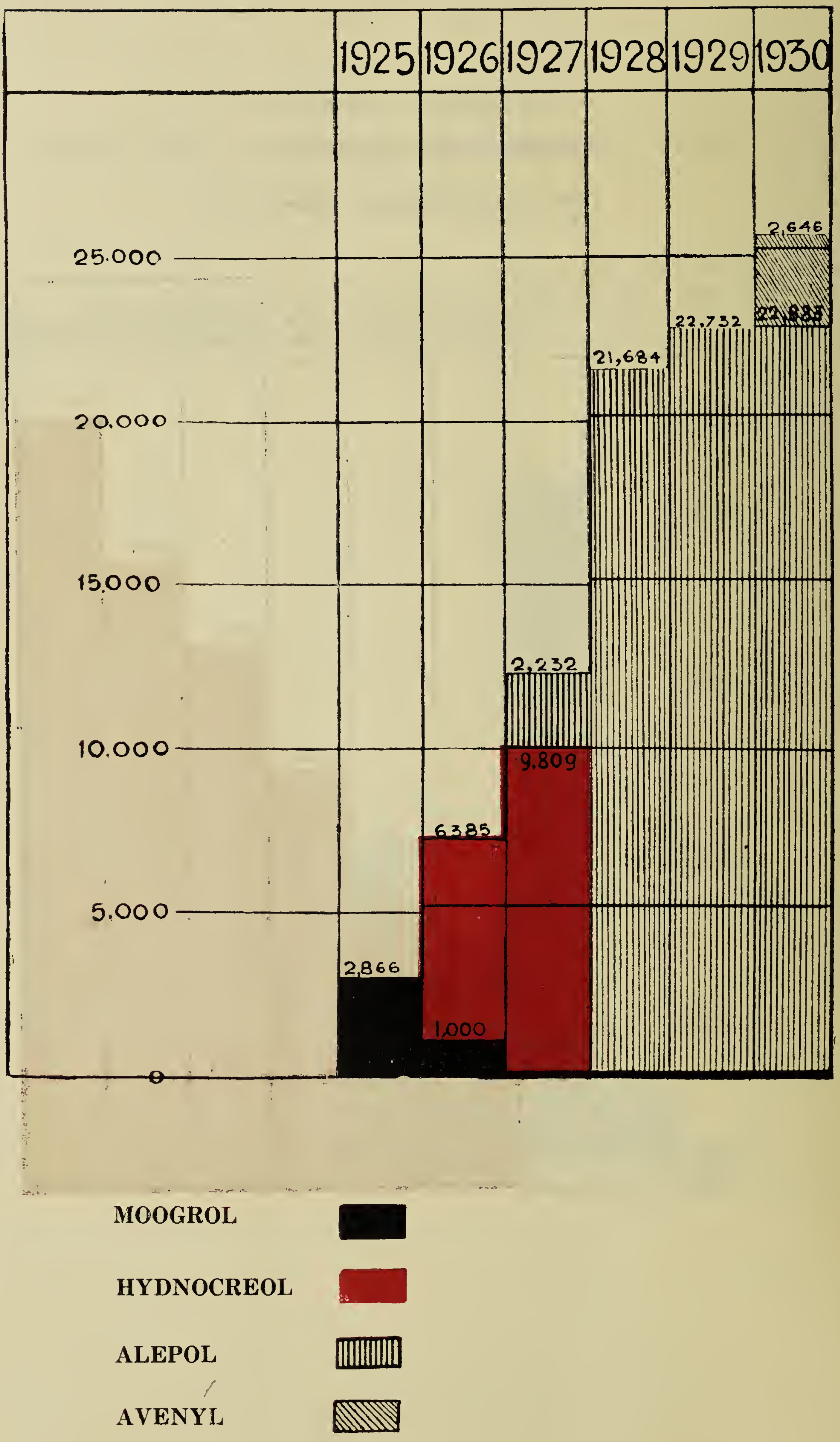
Total Treated for Six Years.



APPENDIX XXXVI.

LEPER CAMP KUCHING.

INFECTIONS FOR SIX YEARS.



PLAN

LEPER CAMP 13th MILE

Scale 4 Chains = 1 inch.

Pring

Road

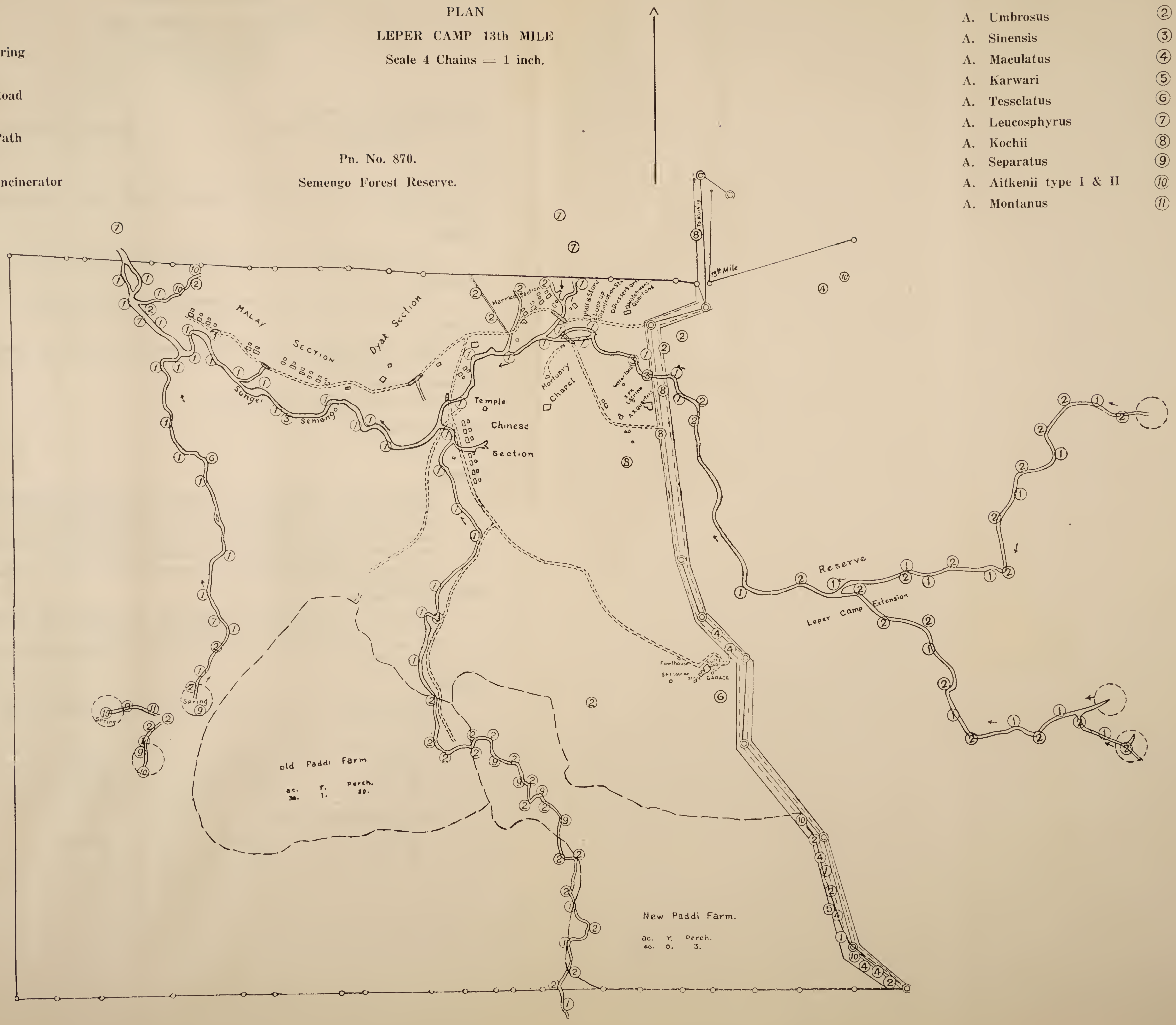
Path

Incinerator

Pn. No. 870.

Semengo Forest Reserve.

A. Barbirotris	①
A. Umbrosus	②
A. Sinensis	③
A. Maculatus	④
A. Karwari	⑤
A. Tesselatus	⑥
A. Leucosphyrus	⑦
A. Kochii	⑧
A. Separatus	⑨
A. Aitkenii type I & II	⑩
A. Montanus	⑪



APPENDIX XXXVIII.

SARAWAK LEPER CAMP.

ANNUAL REPORT.

The Chief Health Officer,
The Principal Medical Officer,
SARAWAK.

Kuching, 31st December, 1930.

Sir,

I have the honour to submit hereunder the Annual Report on the Sarawak Leper Camp for 1930.

Health.

The general health of the Camp throughout the year was good.

Hookworm.

Treatment for this infection was carried out as in previous years.

Malaria.

Eight cases of Benign tertian infection occurred during the last quarter of the year. All recovered.

Dysentery, Amoebic.

Three cases occurred. All recovered.

Dysentery, Bacillary.

No cases.

Leprosy.

Treatment with Alepol up to 4%, strength was continued throughout the year with good results. Avenyl in 0.25% solution in Hydnocarpus oil was used in all cases with a positive Wasserrmann with encouraging results.

Potass Iodide. The use of this drug continued. The results of continuous treatment shews gratifying improvement in practically every case.

A considerable number of Plus 4 cases becoming Plus 2 and 1 in their smear examination at the end of the year.

Water Borne Diseases.

This shows a very considerable decrease from the previous year, accounting for only 4.32%, of the diseases other than Leprosy treated.

The reason for this decrease is due to the improved water supply and sanitation of the Camp.

Inmates.

The total number for the year was 471, showing an increase of 87 over the previous year.

On the 1st January, 1930:—

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
37	9	= 46.	141	51	= 192.	68	7	= 75.	= 313.

On the 31st December, 1930:—

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
47	19	= 66.	170	67	= 237.	85	6	= 91.	= 394.

APPENDIX XXXVIII—(contd.)

Admissions.

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
13	12	= 25.	72	29	= 101.	32	2	= 34.	= 158.

Discharges.

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
1	2	= 3.	24	7	= 31.	7	2	= 9.	= 43.

Deaths.

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
2	1	= 3.	12	2	= 14.	9	0	= 9.	= 26.

Absconded.

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
0	0		10	1	= 11.	0	0		= 11.

Births.

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
0	0		3	0	= 3.	0	0		= 3.

Treatment.

Injections.

Alepol. 3, 3½ and 4% Sol.	22.889	=	81.842 Cc.
Avenyl. 0.25% Sol.	2.646	=	7.595 Cc.
P. A. T. 1% Sol.	94	=	143 Cc.
Neuroyatren	16	=	16 Cc.
Yatren Casein, Weak	6	=	6 Cc.
Bismostab	36	=	33 Cc.
N. A. B. 0.3	17 Doses.		

Total number of injections:
25.704 = 89.635 Cc.

In addition Moogrol and Hydnocreol was used as Ointment for ulcers as before.

Diseases Treated.

1.	Abscess, Gluteal	6	17.	Leprotic Fever	283
2.	Amenorrhoea	1	18.	Lumbago	4
3.	Anaemia	6	19.	Malaria, B.T.	8
4.	Aneurysm	1	20.	Mental Instability	2
5.	Asthma	1	21.	Nephritis	1
6.	Bronchitis	41	22.	Neuralgia	3
7.	Colic, Intestinal	115	23.	Neuritis, ulnar	16
8.	Conjunctivitis	43	24.	Rheumatism	11
9.	Cuts	2	25.	Toxaemia	1
10.	Debility	72	26.	Tuberculosis, P.	3
11.	Dental Extraction	1	27.	Urticaria	1
12.	Disturbed Action Ht.	1	28.	Abortion, 4th Mth.	1
13.	Dysmenorrhoea	1	29.	Still Birth	1
14.	Epilepsy	2	30.	Diarrhoea	31
15.	Hepatitis, amoebic	3	31.	Dysentery, Amoebic	3
16.	Influenza	118	32.	Constipation	3

Total .. 786.

APPENDIX XXXVIII—(contd.)

In addition to the above diseases treated may be included:—

Routine Leprosy Treatment	25.704
Routine Hookworm Treatment	178
Routine Dressings	49.612

Causes of Deaths.

Aesthenia	19	
Bronchitis	1	
Syncope	3	
Tuberculosis, Pulmonary	3	= 26.

Buildings, etc.

The following buildings were erected and completed during the year:—

14 Huts. Dyak and Chinese Sections.
1 Hut. For Visitors.
1 Sanitation Cooly Line.
4 Temporary Leaf Attap Huts.
1 Engine and Pump Shed.
Extensions to Dresser's Quarters.
The Reservoir was enlarged and dug up, the dam wall was also extended.
A considerable amount of levelling and filling in for building on was done.
Pit type Latrines were constructed for the different Sections.

Water Supply.

The new Motor Pump was installed during the last month of the year by the P.W.D. and tested. It has however not been put to full use yet.

Transport.

The Morris Lorry was sent in the P. W. D. Garage twice during the year for overhaul and repairs.

Visitors.

A total of 478 visited the Camp, amongst whom were the Acting Resident; I.D.; Acting D.O.I.D.; Commr. of Police; P.M.O.; Acting P.M.O.; C.H.O.; A.H.O.; Lt.-Commdr. Hughes, R.N.; Surg. Lt. Bamford, R.N.; R. D. Binnie; Capt. W. J. Smith; Mr. and Mrs. Gardner; The Bishop; Archdeacon Champion; Rev. Linton; Misses Oliver, Harkness and Collinson; the R. C. Fathers and Sisters.

Board of Visitors.

The Board visited the Camp twice during the year on the 1st April and 3rd September.

Parole Leave.

Parole leave to visit their homes were granted to a number of lepers. One Dyak however failed to return.

General.

The Cinema was operated eight times during the year.

Staff.

Asst.-Surgeon Kurup reported his return from leave on the 7th July and resumed duties on the 8th July.

Dresser Sirikod was appointed to the Camp and took up his duties on the 11th February.

Warder Ram Singh was appointed in the vacancy caused by the late Warder Sarjin Singh being invalided out.

Dresser Sirikod was granted three weeks annual leave on the 24th December.

I went on vacation leave on the 27th December.

Rainfall.

The total rainfall for the year amounted to 129.26 inches, being 35.88 inches less than the previous year.

APPENDIX XXXVIII—(contd.)

A table showing the rainfall for the years 1926-1930 is attached.

I have the honour to be,
Sir,
Your obedient servant,
A. CLUNIES-ROSS,
Superintendent,
SARAWAK LEPER CAMP.

Injections.

Alepol, etc.	25.74	= 54.58%.
Admissions	158	
Discharges	43	
Deaths	26	
Absconded	11	
Total Number under Treatment	471.	
Percentage of Discharges to total treated		9.55%
Percentage of Deaths to total treated		5.52%
Percentage of Re-admissions to total admitted		10.75%

Re-Admissions:—

Malays.			Dyaks.			Chinese.			
M.	F.		M.	F.		M.	F.		
3	1	= 4.	10	2	= 12.	1	0	= 1.	= 17.

(included in total of admissions).

Death Rate.

Year	1925.	1926.	1927.	1928.	1929.	1930.
Population	150	175	252	331	384	471
Deaths	15	13	15	19	21	26
Death rate per Mille of Camp Population	100	74	59	57	54	55

COMPARATIVE SMEAR EXAMINATIONS.

December 1929.

Negative to M. Leprae		21.07%	
Plus 1.	Do.	26.22%	
Do. 2.	Do.	20.39%	
Do. 3.	Do.	19.45%	
Do. 4.	Do.	11.47%	
Do. 5.	Do.	1.40%	= 100.00%

December 1930.

Negative to M. Leprae		20.00%	
Plus 1.	Do.	42.19%	
Do. 2.	Do.	19.52%	
Do. 3.	Do.	12.93%	
Do. 4.	Do.	5.36%	
Do. 5.	Do.	Nil.	= 100.00%

TABLE OF RAINFALL AT LEPER CAMP.

Month.	1926.	1927.	1928.	1929.	1930.
January	—	25.88	21.42	10.69	12.86
February	—	19.61	16.01	25.87	7.31
March	—	19.41	8.78	24.16	17.37
April	—	14.21	6.60	14.01	6.42
May	14.14	12.16	8.22	11.14	8.46
June	6.37	8.19	4.09	10.48	6.92
July	15.98	7.35	4.13	4.94	1.31
August	4.28	7.21	10.23	5.43	7.60
September	15.53	16.74	8.09	14.36	5.89
October	10.29	11.23	14.31	18.25	21.13
November	14.79	13.95	12.91	10.19	17.05
December	9.68	15.46	23.13	15.62	16.94
Totals	91.06	171.40	137.92	165.14	129.26

APPENDIX XXXVIII—(contd.)

LIST OF BUILDINGS AT THE LEPER CAMP.

December 31st, 1930.

Permanent Buildings.

1 Superintendent's Bungalow.
1 Assistant-Surgeon's Bungalow.
1 Dresser's Quarters.
1 Warder's Quarters.
1 Sanitation Cooly Line.
1 General Store and Shop.
1 Visitor's Hut.
1 Visitor's Disinfecting Station.
1 Lock-up.
1 Receiving Store.
1 Office and Dispensary.
1 Cinema Engine House.
1 Mortuary.
1 Shopkeeper's Hut.
1 Isolation Hut.
1 Dyak Mandor's Hut.
1 Malay Mandor's Hut.
1 Chinese Mandor's Hut.
7 Married Section Huts.
12 Malay Section Huts.
12 Chinese Section Huts.
9 Dyak Section Huts.
1 Engine and Pump Shed.

Total = 59.

Temperory Buildings.

5 Long Huts, Leaf Atap roof and walls.
7 Small Huts, Leaf Atap roof and walls.

Total = 12.

Other Buildings.

1 R. C. Mission Chappel.
1 S. P. G. Mission Chappel.
1 Tapekong House.

APPENDIX XXXIX.

KUCHING METEOROLOGICAL STATION IS SITUATED AT LAT. 1.33.29 N: LONG. 110.20.31 E.
THE HEIGHT OF THE STATION IS 29.5 FT. ABOVE MEAN TIDE LEVEL.

KUCHING METEOROLOGICAL RETURN 1930.

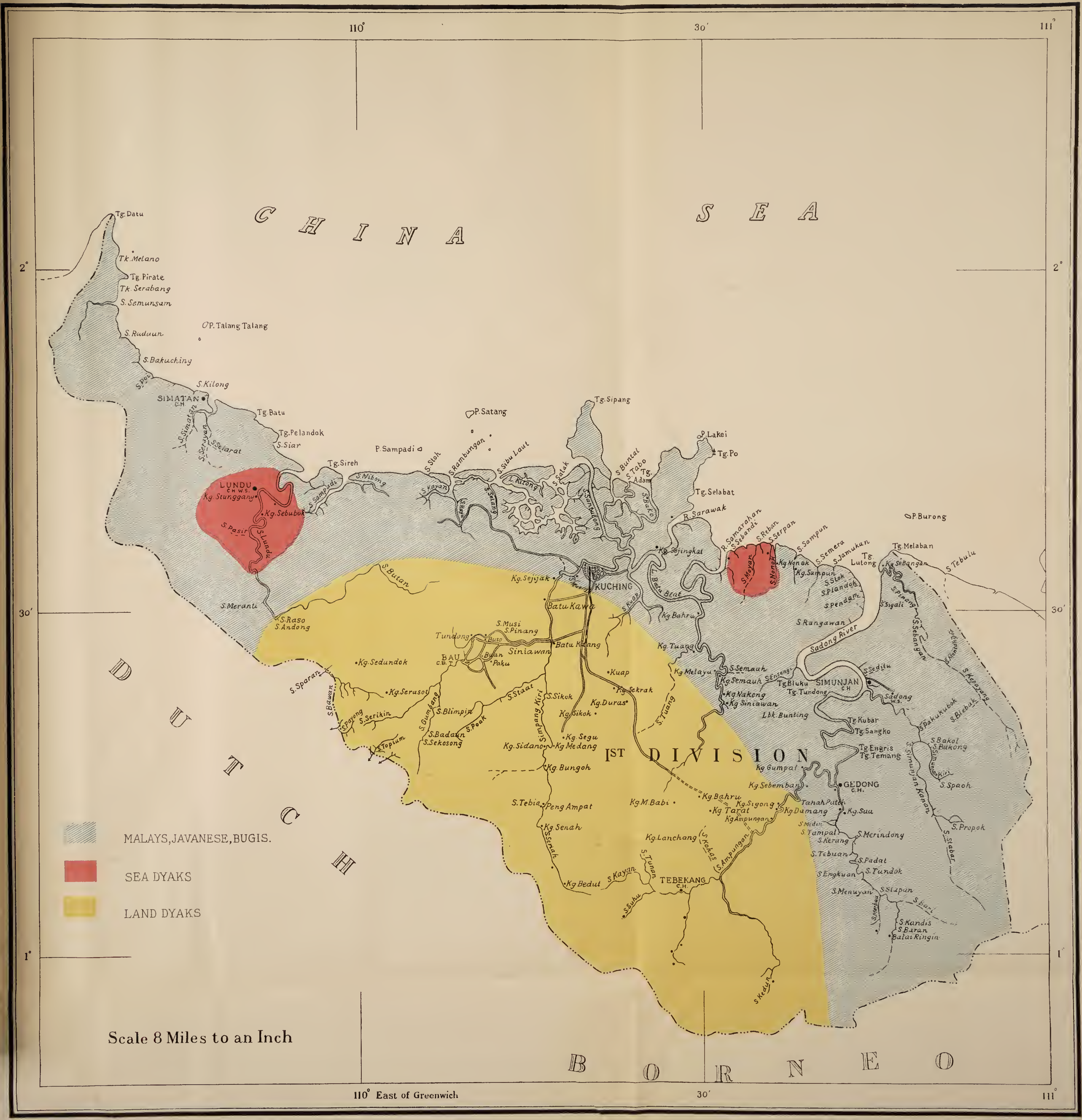
1930 MONTH	RAINFALL IN INCHES	EVAPORATION IN INCHES		RELATIVE HUMIDITY	SOLAR RADIATION MEAN		SHADE TEMPERATURE ABSOLUTE		TEMPERATURE ON GRASS ABSOLUTE		HEIGHT OF SUBSOIL WATER ABOVE MEAN TIDE LEVEL	TEMPERATURE OF SUBSOIL AT 4 FEET	
	Total	Total	Aver.	Monthly Mean Percentage	Max.	Min.	Max.	Min.	Max.	Min.	Mean	Mean	Range
	Inches	Ins.	Ins.								Feet		
January	33.19	1.69	.024	75	154°F	121°	90°F	70°	71°F	68°	22.9	84°F	1°F
February	9.89	1.3	.026	81	154°F	132°	88°F	70°	73°F	68°	23.4	83°F	1°F
March	13.47	1.82	.034	81	150°F	120°	89°F	70°	72°F	69°	24.	84°F	1°F
April	8.9	1.43	.031	68	151°F	131°	90°F	69°	72°F	68°	23.6	84°F	1°F
May	5.12	1.51	.031	75	152°F	128°	91°F	70°	72°F	69°	23.8	85°F	1°F
June	6.88	1.35	.039	71	154°F	145°	94°F	71°F	73°F	66°F	22.4	84°F	1°F
July	5.33	1.91	.06	63	150°F	140°	93°F	72°F	72°F	69°F	22.6	85°F	1°F
August	4.16	2.17	.07	67	150°F	140°	95°F	69°F	68°F	72°F	22.6	85°F	1°F
September	5.53	1.63	.051	68	154°F	128°F	94°F	72°F	73°F	71°F	22.8	85°F	1.5°F
October	15.98	1.28	.041	71	153°F	134°F	92°F	71°F	72°F	70°F	23.4	85°F	1.5°F
November	16.28	1.48	.048	74	154°F	149°F	91°F	70°F	71°F	69°F	25.4	85°F	—
December	17.2	1.28	.042	76	156°F	146°F	91°F	70°F	72°F	—	24.66	84°F	1°F
Total Rainfall	Total rainfall. 140.93	Total Evaporation 18.85			Abs. max. 156°F	Abs. min. 120°F	Mean Shade Temperature 78.99		Abs. max. 73	Abs. min. 66	Mean height above M.T.L. 23.46	Average monthly mean 84.4°F	
Normal Average 149.39					mean max. 152.7	mean min. 134.5			mean max. 71.7°F	mean min. 69°F		average monthly range 1.09°	

A slight earthquake occurred in Kuching on September 1st at 3 p.m. The last shock previously recorded in Sarawak was at Miri on November 5th, 1929.

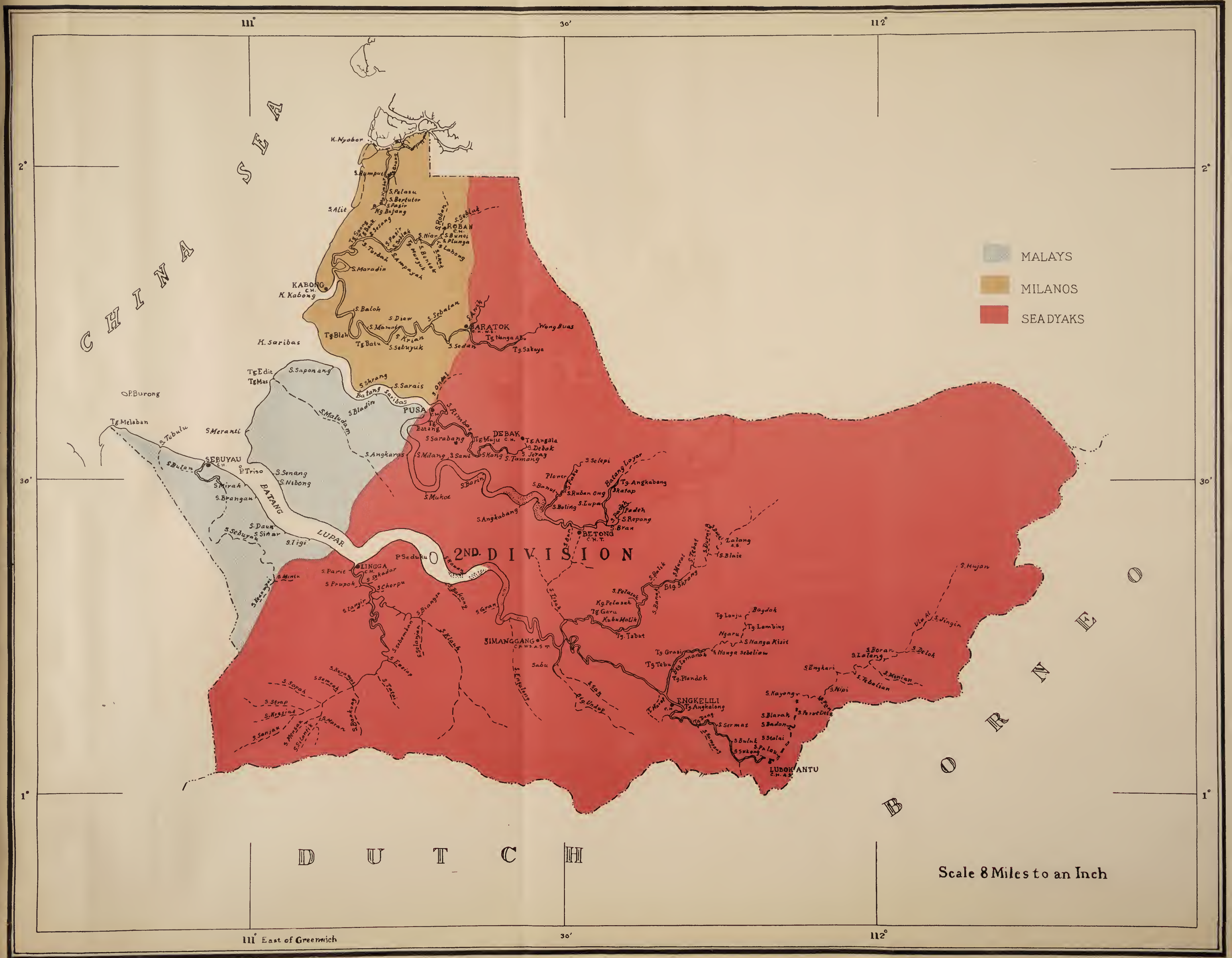
APPENDIX XL.

NAME	General Hygiene	General Sanitation	Mosquito and Malaria	Pateonics and Rats	Sanitary Engineering	Office Procedure and Meteo.	Vital Statistics and Local Law	Sanitary Report	Colloquial Aptitude	Assessment of Year's Work	Mean aggregate percentage	REMARKS.
Beng Siang ..	100	72	64	94	58	85	96	100	85	98	85.2	
Brodie ..	65	81	74	84	60	65	73	100	85	90	77.7	
Geikie ..	80	74	67	84	63	53	60	98	100	95	77.4	
Selvaduray ..	93	76	42	90	62	57	76	90	95	55	73.6	
Chong Hcwe .	97	78	84	87	32	69	42	92	90	60	73.1	Probationer in training recently joined.
Ah Jin ..	50	71	81	85	43	58	42	96	95	88	70.9	
Swee Hock ..	57½	76	46	70	45	64	67	90	100	90	70.6	
Reutens ..	67½	66	56	94	35	35	55	100	90	89	68.8	
Waini ..	72½	58	51	84	47	50	48	90	100	80	68.1	
Marican ..	65	44	52	75	38	45	61	90	100	80	65.	
Nam Boo ..	75	57	47	72	42	35	44	94	87	50	60.3	Probationer in training recently joined.
Geck Cheng ..	57½	72	45	78	27	48	42	80	60	50	56.9	
Suleiman ..	20	28	30	57	36	45	38	70	100	99	52.3	

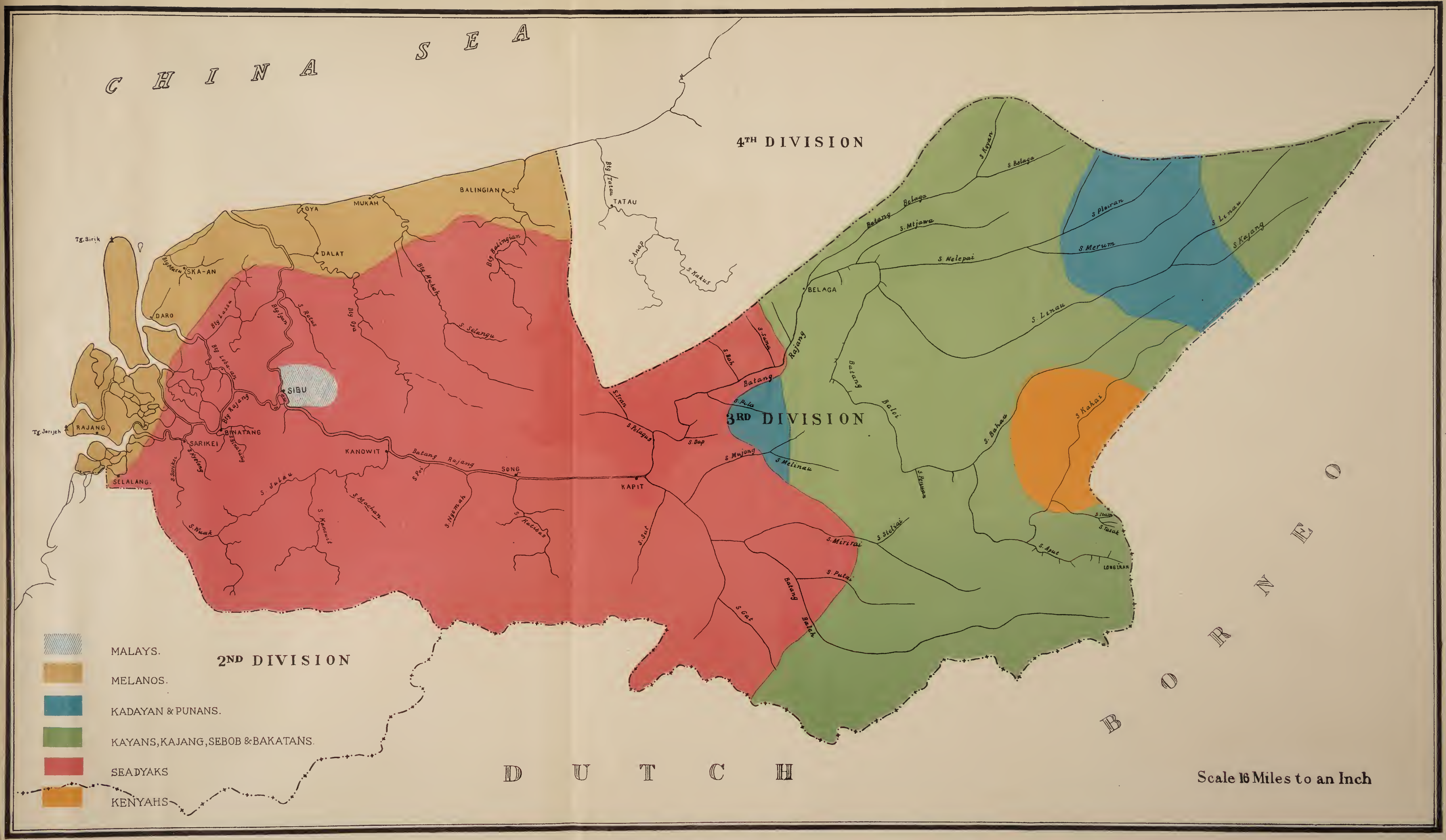
MAP OF THE FIRST DIVISION — SARAWAK

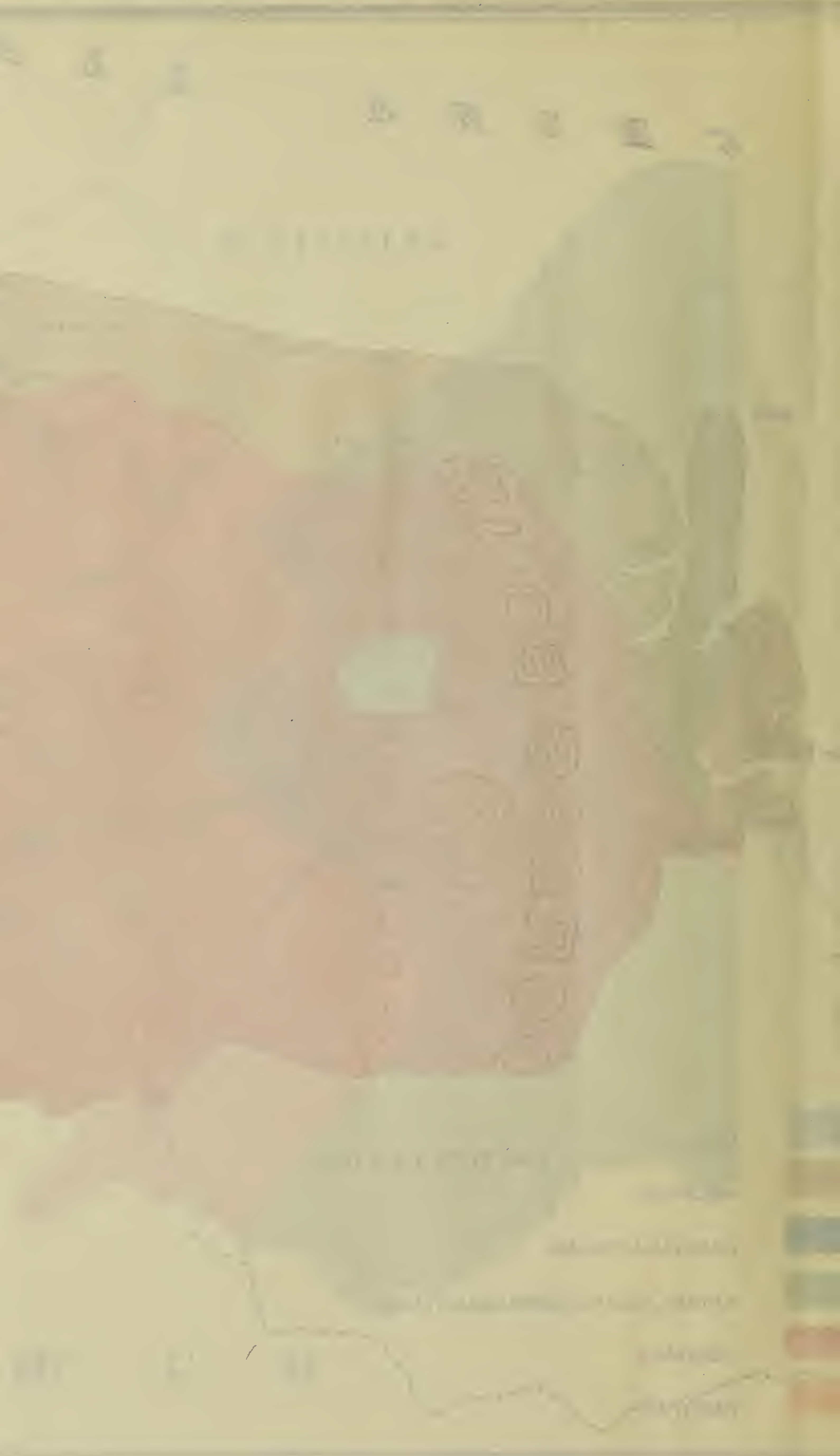


MAP OF THE SECOND DIVISION — SARAWAK

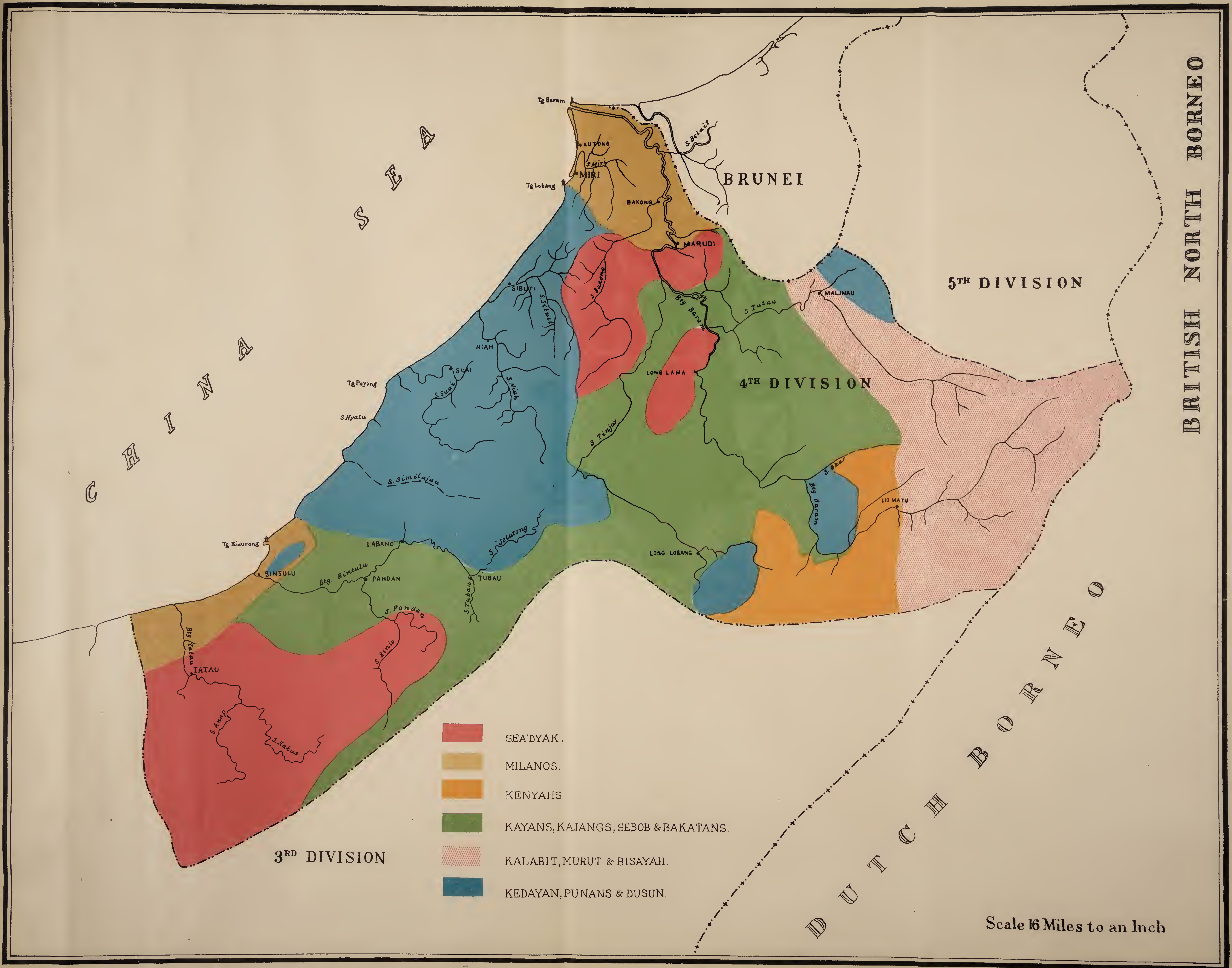


MAP OF THE THIRD DIVISION — SARAWAK





Map of the 4th Division—Sarawak



MAP OF THE FIFTH DIVISION — SARAWAK